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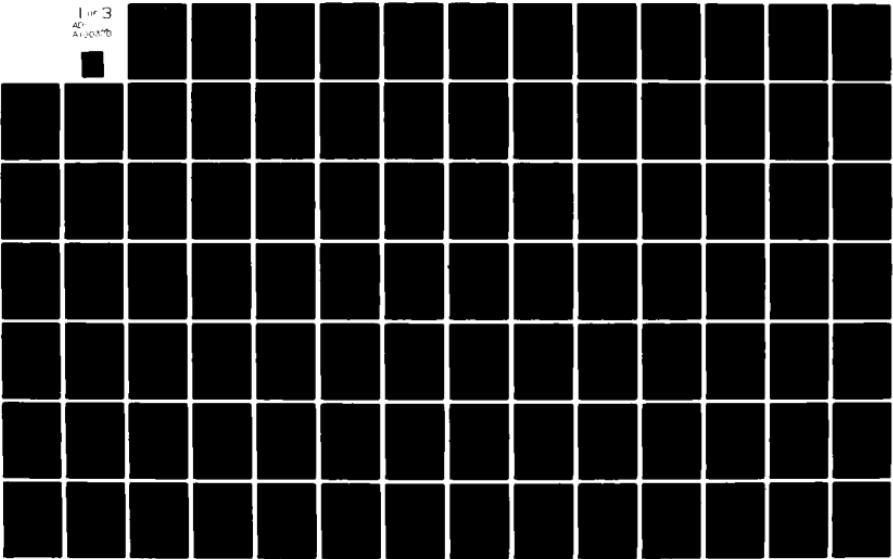
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A STUDY OF SOME ISSUES WHICH MAY INFLUENCE THE QUESTION OF A ROLE FOR FREE-FALL WEAPONS.

by

Frank E. Armbruster

with contributions by

ANDREW CARANFIL
NORMAN FRIEDMAN
JOHN THOMAS

JUN 1 3 1981

prepared for

NAVAL WEAPONS CENTER
U.S. DEPARTMENT OF THE NAVY

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with contributions by

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Norman Friedman
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Jacquelyn K. Davis and Robert L. Pfaltzgraff, Jr., Soviet Theatre Strategy: Implications for NATO, USSI Report 78-1, United States Strategic Institute.

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A STUDY OF SOME ISSUES WHICH MAY INFLUENCE THE QUESTION
OF A ROLE FOR FREE-FALL WEAPONS

I. INTRODUCTION

This paper addresses the issues of the possible future role of free-fall weapons and precision guided munitions from, in some real sense, both broad and narrow points of view. On the one hand, it has a broad point of view because, in addition to being cognizant of the military factors, it brings in the political, demographic, moral, economic, geographical, etc., issues, which affect the decisions whether or not to launch any air strikes, and if so with what kind of munitions. On the other hand, in some areas this phase of the study is also narrow from the "technical" point of view, insofar as it does not address in any detail, for example, such issues as the change in milieu which could be achieved by adapting free-fall weapons to put them in the PGM category, or even the advisability of doing so. In fact, even the inventories of free-fall weapons or PGMs are not covered in any detail. (These "shortcomings" are intentional and mandated.)

The increased or decreased competence of both fixed-wing aircraft-delivered free-fall weapons and PGMs, because of improved technology in the delivery area, new (and rediscovered?) countermeasures, and relative competence of U.S. and friendly aircraft and ground crews, are touched on. Despite some ongoing controversy among experts, and the admitted lack of combat experience in recent years, solid evidence contradictory to the "accepted" effectiveness numbers, based on sophisticated new equipment, is difficult to come by (both for free-fall and PGM weapons), so these numbers are not disputed, but the explicit descriptions

of assumed targets and combat areas, outlined later, do of necessity reflect general considerations of these issues of controversy.*

The primary general thrust of this paper deals with the points where "non-military" factors impinge on the purely military factors in "cost effectiveness" of the weapons in question.** The bulk of the information is in the examination of not completely atypical areas, and not inconceivable scenarios where we, and/or friendly forces, may consider launching ordnance from fixed-wing aircraft. It is to these areas, and under these scenarios, that the effects on the demands for such ordnance are examined.

Section II is a summary discussion of a few general thrusts of the paper which impact on this phase of the analysis of requirements for fixed-wing aircraft-delivered ordnance. (In some of the pieces in Section V, on world areas and military, political, economic, sociological, demographic and geographic situations which are assumed to apply, some further points affecting this phase of analysis can be inferred.)

Sections III and IV are short pieces, the purposes of which are first, merely to clarify a few positions in the "political" area held

* In the collateral damage discussions, consideration is given to the "outlyers" as well as the dimensions of the average CEP. Clearly, the former are very general assumptions, nor are the latter (combat CEPs) more than educated estimates. Both, however, are adequate for the broad treatment given to applicable targets, collateral damage, etc., in this paper.

** We have non-military in quotes because some of the points included, such as topography, meteorological factors, etc., are normally not thought of as non-military.

by the author, but which are sometimes not addressed and without this short treatment some assertions in this paper may be less effective; and second, to state unambiguously some well-known and accepted points in the "military" area so that there may be less doubt that we all are talking about the same thing later on in the study.*

Section V is the portion which examines explicit situations where fixed-wing aircraft may be considered as vehicles from which to launch ordnance. It does not go into great detail about the areas where U.S. forces currently face enemy forces in significant numbers, except for one example to indicate the profound effect of one "outbreak" scenario on the battle scenario and the priority and makeup of the target list, as well as the scheduling of the strikes. (The unclassified literature, at least, is full of "battle scenarios" for a U.S.-Soviet conflict in Europe and a U.S.-North Korean confrontation--and now for a conflict in the Persian Gulf area--and the targets and strike requirements have been discussed repeatedly, though the scenarios themselves and assumed factors governing the military activities need not always be realistic.)

The areas and circumstances that are covered in greater detail, with greater emphasis on the target mix and elements affecting strike requirements, are those where the U.S. forces are not today standing "eyeball to eyeball" with known enemy forces, but where, nonetheless,

* Appendix B touches on some examples of the types of issues which have in the past affected, and probably will in the future affect, weapons application, but which were not specifically identified as directly applying to weapons application as assumed in the main body of the study.

the use of U.S. and/or "friendly" fixed-wing aircraft and/or U.S. ordnance is not inconceivable.*

The areas and circumstances examined are not atypical of crisis spots which have arisen before and where current circumstances could be looked on as possible prologues to future crises and confrontations. The detailed possible circumstances outlined are by no means meant to be exhaustive but to provide not completely atypical backgrounds for determining possible ordnance requirements by "walking through" various political, demographic, geographic, meteorological, economic etc., environments in which military confrontations are likely to occur (and which affect their courses), as well as considering the military force balance, goals, strategy, tactics, and purely military "cost effectiveness" of weapons systems, etc. The confrontations are assumed to escalate to various levels of military action; sometimes this level is limited by capability and at others it is assumed to be limited by intent because of political consequences, risks higher than goals warrant, etc. (The above topics are discussed further in the introduction to Section V).

Each of these battle-indicative scenarios is based on one or more of a spectrum of assumed detailed "outbreak scenarios," though, as indicated above, only one (for the Central Front of Europe) is included as Appendix A, as an example of this type of analysis.

* Indeed, one problem with the areas chosen in our crises and "battle indicative scenarios" was that after the research had been done and the scenarios written, but before this rather lengthy document could be completed, the categories of some of the scenarios might have been considered by some people to have changed from indicative to "imminent."

II. SUMMARY DISCUSSION

The areas of the world where U.S. air-delivered ordnance is likely to be needed are many and apparently getting more numerous. This may reflect an event which has many analogies in history, that is, it may have resulted from a greater desire for peace (or the weakening of morale of one ideological and/or power bloc, or its leaders), in the face of a dynamic adversary bloc. In this situation, the dynamic bloc has traditionally been likely to spread into "uninfluenced" underdeveloped areas of the world and to pour into the "chinks" which occur in spheres of influence of the weakening bloc and generally to become more and more blatant in pushing its cause, and even in staking claims to territory as it becomes "available." If, however, the prime member(s) of the "declining" bloc should experience some change and not necessarily by a radical turn of events,* traditionally it has been likely that all those actual and potential penetration points could become flashpoints. This paper asserts that such an ideological confrontation exists between the communist (at least Soviet communist) world and the Free World, and assumes a change of attitude by the latter. It outlines the political/military environment in which this confrontation is likely to occur, and

* One of the most impressive demonstrations of such a "reverse" in the U.S. was the release of the spectacular power of public support for the "cause" in the North when Lincoln took office in 1861--a resolve and power in the population, which the "low-morale" previous President, Buchanan, apparently did not even know existed. In 20th century Europe, and the Mid-East, men such as Kemal Ataturk, and even to some extent Winston Churchill (to say nothing of Hitler), helped to inspire surges of more or less dormant energies, to revive troubled and/or apathetic nations to great accomplishments, both for good and evil.

suggests that the average American is likely to support a stiffening of resistance to the communists. It summarizes assumed strike missions and target categories and delivery systems. It discusses some of the possible "scenarios" in some likely flashpoint areas, going into detail also on those scenarios and points which normally are less likely to have been concentrated on in other analytic efforts: e.g., the Horn of Africa, Central America, Angola, Southern Arabia, Cuba. The paper also includes, however, scenarios on the North Cape of Norway, the Central Front in Europe, the Middle East, the Persian Gulf, and Thailand.

Many of these areas will spawn wars that are at a relatively low level of violence, but because of the vast export of arms, particularly the "proliferation" of tanks and other heavy equipment, by the Soviet Union to other areas of the world, the balance of power in these areas has been greatly altered, and the potential for large-scale warfare has increased dramatically. For example, there are currently several areas outside the central front of Europe and Korea where sizeable armored attacks are likely to occur against "friendly" forces, e.g., the Middle East, the Persian Gulf area, Thailand, and now the periphery of Ethiopia. The forces handling this armor will not be the most efficient, but with the exception of Israel in the Middle East, the friendly forces opposing them will have very little experience with mass armored attacks (which can be very demoralizing, even for first-rate troops), and unless there is a drastic change, they may be inadequately equipped with their own armor to fend them off. Under these circumstances, when they are struck by the armor, panic is likely to ensue in the defending armies. The

requirement for close air support and interdiction attacks to reduce the size and speed of these armored thrusts would be extremely urgent, and once again there may be a requirement for air power to try to counter superior armored forces.

As some of the scenarios indicate, however, there are other areas where our help may be needed against a much lesser concentration of armor and other heavy weapons, but nonetheless, a dangerous aggression may be under way. Where the ability to resist is small, the amount of force needed to take over an area may not be large. Despite the lack of ability to resist, small populations and even relatively light overall distribution of the population per square mile, most of the areas examined had sections of relatively dense population where collateral damage could be severe from ordnance dropped from fixed-wing aircraft. Every region had areas sensitive to this possibility, yet at the same time, in most of these regions, there was a probability that outside help would be needed, and that if it could not be provided in the form of ground troops, in many instances there might be a call for air-delivered ordnance to attempt to influence the battle situation. In this case, for targets anywhere near a built-up area, extremely accurate weapons would be called for. In addition to the primary moral and ethical reason, in these "Third World" areas, including the sparsely populated sections, it is assumed that even low-level collateral damage is to be avoided also because it can cause tremendous costs politically for the U.S. and its allies, not only in the war zone but both at home and elsewhere abroad. That is, the use of modern machines against underdeveloped nations, particularly if

the nation or group are "leftist" and the aircraft are those of a "non-leftist" developed nation, cannot only have counterproductive effects through collateral damage which may unite an otherwise fragmented society against "our side," but can also have tremendous propaganda value overseas and even in the U.S. If only a few "Third World" people are killed or injured, or even if a few huts are destroyed, Our friends and allies (new and old) must adhere to the same moral and ethical codes as we, and deliver ordnance under the same restrictions.

In general, one might say that indications are that PGMs apply to at least some sections of all the regions examined, and from a moral and political point of view are preferable. These stand-off weapons also seem preferable in many cases because of the type of targets to be struck and the probable danger of AA fire.^{*} On the other hand, one might also say that there are indications that there may be areas and times in at least some of the regions where, despite the more exotic target detection and identification devices, it may not be possible to acquire and/or recognize specific aiming points, even when the location of targets has been narrowed down to relatively small areas (e.g., jungle areas of Thailand, Nicaragua and Guatemala, or perhaps even at times on the North German plain in winter). When these and certain natural "area" targets cannot be left unmolested, and the region is uninhabited and collateral damage can be avoided (a difficult if not impossible task in much of Europe, for example), and danger to the strike

^{*} We are aware that some highly respected people have more or less completely ruled out anything but stand-off weapons (no "flying over the target") because of the new family of AA weapons. This paper does not address this issue, except to note that others would not agree with this assertion.

aircraft is light, then free-fall weapons may be acceptable and the most logical system to "saturate" the limited areas in which the targets are located.

Of course, the degree of anti-aircraft protection varies considerably from region to region and among the various levels of combat assumed, but the danger to low-flying aircraft from concentrated anti-aircraft artillery might be assumed to be a more widespread phenomenon than an anti-aircraft missile threat to high-flying aircraft.

It must be stressed that each area and type of "scenario" suggested as likely to be involved in potential flashpoints must be examined on its own merits based on the factors discussed in this study. Also, it must be repeated that the "scenarios" (dealing heavily with things outside the military), covered in this paper, are important as not atypical of events which raise the types of problems with which planners may have to cope, but they provide a far from exhaustive examination of these types of occurrences and areas of potential confrontation.

The study, by mandate, and because of the nature of the analysis, did not consider inventories of fixed-wing aircraft-launched PGMs or free-fall weapons. We are, of course, aware of the problems such things as varying inventories, the skill of air and ground crews in handling different weapons, etc., can cause. In the "scenarios," however, the weapons were assumed to be where needed, and with the exception of new "allies" (possibly with non-Western aircraft), the personnel were considered to be on hand to handle even sophisticated weapons adequately to launch at the types of targets and under the types of restrictions listed. Nonetheless, the scenarios have an

important use. As those in this paper make clear, the availability of the correct type of ordnance at the right place at the right time can be critical. For example, in the areas where large armored attacks are likely and we intend to use fixed-wing air to equal the balance, we had best have adequate fixed-wing air-deliverable ordnance there that can hit a tank. Also, where we must avoid collateral damage, we had best have the ordnance there which can do it. "Battle-indicative" scenarios and "target category" lists, such as those in this paper, can be helpful in developing detailed battle scenarios and ordnance requirements for various types of weapons to meet probably future combat and supply requirements in specific "flashpoint" areas.

This does not mean that the U.S. and allied forces must be able to fight all wars at once, in all places on the globe. What it does mean is that the forces and weapons availability and deployment patterns should reflect a capability to support realistic force application requirements.

The scenarios in this study are not meant to be conclusionary from the point of view of war planners or weapons development and supply people, but are meant to help them to improve their own traditional conclusionary processes. Preferably each possible flashpoint situation would have in-depth analysis, including the type indicated by the scenarios in this study. It is through covering (preferably exhaustively) all phases of analysis that true force application and ordnance requirements (or even evacuation plans) can be determined, and such analysis, is far from impossible and seldom fruitless.

III. THE GENERAL MILIEU OF FORCE APPLICATION IN THE 1980S^{*}

To determine the atmosphere which is likely to lead to and influence the location, objectives, degree, type and practitioners of force application, rather broad spectra of several important factors must be analyzed.

A. Some Aspects of the International Political/Military Environment

The discussion in this study of the milieu in which U.S. or friendly military forces may find themselves, and which will influence the issues of if, when, and how they and U.S. ordnance will be used, is influenced by, among other things, a general sweep-of-history approach to discussions of the environment of future confrontations. We mention this because, at least in the recent past, factors germane to this approach have often not been highlighted and much of the emphasis by "knowledgeable people" has been placed on, in our judgment, sometimes rather shaky perceived nuances, "sophisticated" analysis and evaluation, along with some rationalization by revisionist historians, and others, of both the left and right. Indeed, such analysis, which sometimes almost appears to studiously "ignore the obvious," often tends more to follow au courant thinking than straightforward (revisionists would say "simplistic") examination of trends in world conditions. We think the examination of the nature of such trends is important in writing

* This revision of the political, demographic, order of battle, etc., data in this and the following sections of this paper, in producing this final study (as compared to the initial draft version of September 22, 1980) was done in conjunction with developing a similar study, "Strategic Bomber Utilization Enforcement." This latter study in turn largely drew on the substance of this paper for commonly applicable background and scenario data.

analytic papers to assist in policy decisions affecting future weapons use and development. In many respects, the past is prologue.

For example, one factor, and in our judgment an important one, the ideological confrontation aspect of world relationships, had largely disappeared from international relations/military analysis, which concentrated for the most part on relations between countries and "national interests." While we take full cognizance of the great importance of perceived national interests in policy decisions, we also do not think that ideological motivations for policy should be ignored. Apparently the new Reagan administration has feelings in this direction. For the first time in decades, the highest officials in our government are referring to the gravity of confrontations with at least the Soviet communists around the world.

One rivalry from which to draw analogies in the area of ideological confrontation is the historic struggle between the Muslims and the Christians. We all know that there was an extraordinary schism between the Catholics and the Protestants, and in some ways the Christians hated each other more than they hated the Muslims; in fact, since their inception, nation states of all religious convictions were constantly at logger-heads. Nevertheless, particularly up to the 19th century, Protestants or Catholics found it difficult to publicly side with the Muslims against the Christians in really critical confrontations, and it was not just a matter of public, but also private, feelings. Protestants in Elizabethan England felt a sense of satisfaction when

the Catholic Maltese Knights (in a sphere of influence of Philip of Spain) held out against a Muslim siege, and Elizabeth I had Te Deums sung in the English cathedrals for this victory for "Christendom."

Again, 19th century aristocratic countries of Europe, who fought amongst themselves over borders, colonies, etc., continually pulled back from the brink of all-encompassing conflicts lest they be weakened to the point where the alien ideology, Republicanism, might take over. Indeed, perhaps only in the light of an idea of worldwide ideological conflict can much of not only past but current relations among the powers be explained (e.g., Russia's support of revolutionaries in Angola and keen interest in, and prodigious support of, a marathon talking dictator in, of all places, Cuba).*

One could make the argument that inadequate attention to the ideological confrontation factor led us to grave mistakes in dealing with communists and communist states during and after World War II, and indeed right up to the very recent past. Such suggestions (particularly

* Nor can schisms within an ideological camp be used to frustrate this argument (e.g., the Sino-Soviet split). When the Muslims were sweeping over Africa and Spain, at the height of their expansion, there were bloody conflicts between the Shiite and Sunni sects within the Muslim camp. (And treaties between Christian and Muslim countries usually came to naught when the chips were down, e.g., France's treaty with the Muslim states during the siege of Malta, mentioned above--France would not even sell them naval stores.) Again, when the Christian (Western) cultural onslaught swept the Muslim empire away and spread around the world, it was after the reformation when Catholics and Protestants were in conflict within the Christian camp. As indicated above, Monarchists fought each other in the Crimea, Franco-Prussian War, etc., but their opposition to Republicanism did not waver.

pre-Afghanistan) were considered by some of the fashionable "sophistates" as a sign that those making them were probably naive and perhaps also not very bright.* Even when the confrontation had become painfully obvious, many of these "sophisticates" (some of them influential) apparently continued to underestimate the ends the ideologues were most likely seeking and allowed themselves, and sometimes even our leaders, to be maneuvered into positions which many feel prudent men would have avoided. We consider that powerful factors, such as this ideological confrontation stemming from the severe political differences between the totalitarian communists and the adherentes of democracy, will continue to be extremely important throughout this century.

Among other things, the apparent ineptness in dealing with even supposedly weak communist forces may have contributed to the feeling of frustration on the part of the citizenry and the lack of confidence in the leadership in Washington. Nor can this all be attributed to blunders by politicians. Apparently inept military operations, e.g., some in Korea, the Pueblo Affair, some in Vietnam, etc., and more recently the unsuccessful hostage rescue attempt in Iran (it was probably safe to say that the Bay of Pigs failure was primarily the result of a political leader's intervention in "the plan," and this may also be true in some other operations), may have helped foster a possible drop in morale among U.S. leadership and a great increase in frustration

* E.g., some sophisticates held up Presidential candidate Ronald Reagan's references to "Godless Communism" as indicators of his lack of grasp of complex issues.

among the population. Overriding everything, however, has probably been our motivation to keep the peace--to avoid war.

Our policy of "containment of communism," a rather passive posture after all in the face of a dynamic ideology, was apparently changed to apply to certain areas only, namely Europe, South Korea, and Japan, and now there is at least a declaratory commitment regarding the Persian Gulf, and the new Administration seems inclined to show a renewed interest in defending Central America and other areas as well. Western Europe and Japan have traditionally been capable of defending themselves while others, including many of our next door neighbors in Latin America as well as many sections of Africa, Central and Southeast Asia, are not. Assumptions of low morale, at least, among the U.S. leadership, and a continuing inadequate effort by our allies to carry their share of the military and economic burden of containment, may have led the world to believe that at least areas other than Western Europe, Japan, and Korea were more or less open for exploitation.*

In short, the desire for peace on the part of the West may have been taken for timidity, and this apparent "timidity" of the U.S. and

* Regarding our allies' capabilities: European NATO nations, without Turkey, are vastly superior to the Warsaw Pact (including the U.S.S.R.) in technology, wealth (their combined GNP is about equal to ours and twice that of the Pact), military knowledge and industrial power; they are not that far below the Pact in manpower, and several NATO nations have a higher per capita GNP than the U.S.; but, with the exception of Britain, none spend as much of their GNP on defense as the U.S. Furthermore, Britain has not had a draft since 1958, despite the weakness of Europe's conventional forces, and many of those European nations that do draft, do so for periods of as little as nine months, while U.S. men were drafted for two years up to 1973 (and may be again), and many were sent 4,000 miles from home to maintain the large segment of our armed forces we keep in Europe.

its allies may have been transmitted throughout the non-communist world. Indeed, with the great and diligent covert and overt cooperation of the Soviet communist allies, all of Indochina, Angola, Ethiopia, Afghanistan, etc., fell to communism or communist-dominated forces. Presently, Nicaragua and El Salvador in Central America, and Somalia (itself a "Marxist state" now having second thoughts) and a dozen other African and Middle Eastern states are threatened internally from foreign-supported communist-dominated revolutionaries and guerrillas, and/or externally from communist-armed forces from neighboring states. Other states' behavior might have been interpreted to mean that they "had seen the handwriting on the wall" as far as the U.S. was concerned, e.g., Pakistan would not agree to the movement of arms for the Afghan rebels through her territory; our NATO allies would do little to disconcert the U.S.S.R. (in 1980 most would not even boycott the Olympics in Moscow), despite her blatant direct and indirect military intervention around the world, and particularly in Afghanistan; ^{*} Mexico came out publicly as a supporter of Castro if the U.S. should attempt to pressure Cuba through a blockade. African leftists were greatly heartened by U.S. and Western European refusal to counter the swarm of Cubans, Czechs, East Germans, North Koreans, and Soviets, and mountains of Soviet war

^{*} It remains to be seen what our NATO allies will do, or how long they will continue even economic sanctions against the Soviets and their Pact cohorts, if they invade Poland and "pacify" it, à la Czechoslovakia.

materiel pouring into Africa. (NATO countries do support, however, monetarily and militarily, the stability of Third World governments, thus reducing the targets of communist subversion. Germany sends money--as does Japan. French troops are active throughout Central Africa in supporting local governments but they have not gone head-to-head against Soviet-supported forces in Africa. British volunteers also man Omani aircraft, etc., and a French fleet is in the Arabian Sea.)

In giving up the Panama Canal, and the Zone, we are in the process of removing the last U.S. presence in Central America, eventually including special-forces schools for U.S. and Latin American troops and air-bases within heavily loaded medium-sized transport and fighter bomber range of all of Panama, Nicaragua, El Salvador, and upper Colombia. When this withdrawal is complete, our closest base could be in Florida, between 700 and 1,000 miles from Central America (and in order to get the shorter figure we must overfly Cuba). Soviet/Cuban-dominated leftists may have begun to look like the wave of the future in Central America--and perhaps all of Latin America, though currently the Catholic bishops of El Salvador refuse to support the leftists against the present centrist government. Meanwhile, Mexico and other Latin American countries do nothing, and even though they may often wish we would intervene, are afraid not to disapprove of the rare U.S. action to oppose leftist takeovers. These countries fear the leftists, dominated or backed by Cuban totalitarian communists, who in turn are backed by the powerful Soviet communists, all serious, dedicated men of (dangerous)

principle. Not only can this ideological bloc cause leftist riots in Latin American capitals, but perhaps because of our actions, or inactions, in the recent past (e.g., our failure to take vigorous sponsorship of Latin American moderates' opposition to the leftists, and perhaps also our apparent lack of conviction, resolve and principle in confrontations with leftists), it also may have caused many Latin Americans to believe that in the end they would have to deal with ruthless communists, who have long memories, while the U.S. would put up with a great deal from Latin American countries lest we incurred even a greater degree of their dislike, which, of course, could well have lost us their respect.

In Southeast Asia the U.S. credibility in the military area has been quite low, and the fabulously wealthy, industrial, technological, and demographic giant of the Eastern Pacific Basin, with a spectacular military competence--Japan--also does nothing (based on our behest of the 1940s). We had hopes of China's opposing Soviet-backed communist aggression in Southeast Asia, though we did not want her to do it by invading North Vietnam. But what of Chinese-backed communist aggression, or a rapprochement between China and the U.S.S.R. to facilitate a communist takeover, as was the case in South Vietnam? Or the division of East Asia into spheres of influence between the two communist giants (à la the Nazi-Soviet pact in Europe in 1939).

In addition to this fundamental left-right confrontation, we and "friendly" nations are likely to be caught up in other crises, which though basically of a less potentially escalatory nature may require

action on their own, and could eventually involve the left-right problem, too. Not only Muslim fundamentalists but members of other religious and nationalistic movements may tend to become "ethnocentric" and see real or imagined, past or present, wrongs committed by "infidels," foreigners, etc. A unifying or proselytizing action at such times can easily be emphasis on "threats" from the outside, and subsequent attacks on, or the capture of, territory, nations, embassies, etc., of a representative "infidel" or "offensive foreign" power, preferably a tame one--or one or more of its weakest "lackeys."*

In addition to potential "ideologically" motivated crises there are the possibilities of standard nation-state confrontations over border and territorial issues (e.g., North Yemen and Saudi Arabia, Turkey and Greece over Crete, etc.) and competitive positions within the "Western bloc" (e.g., Argentina and Chile). Some seem to feel that the most potentially dangerous ones are within the more dynamic communist orbit (e.g., China and the U.S.S.R., China and Vietnam, perhaps Yugoslavia and the U.S.S.R.).

* A rumor that the attack on the Mosque at Mecca had been inspired by the U.S. was enough to cause Pakistani Muslims to sack and burn the U.S. Embassy. The actual over-running of the entire Muslim nation of Afghanistan by the U.S.S.R. not only saw no Soviet property touched in next-door Muslim Pakistan, but also not in the most remote Muslim country. An attempt by Afghan students in Teheran to attack the Soviet Embassy--a city where militant civilians had been holding the U.S. Embassy and 53 American hostages for weeks--in protest of the Soviet Afghan invasion, was repelled by Iranian revolutionary guards when the students tried to scramble over the wall around the Embassy grounds and burnt a Soviet flag found on that wall. Even then, it is said that the Soviet ambassador descended on the Iranian foreign office with a thunderous ultimatum concerning any repetition of such nonsense which left the Iranians shaken to their sandals.

This may not necessarily be as dangerous as it looks. For example, it is not difficult to envision a "two front" ploy on the part of the Soviets where they try to use Vietnam in the role they may see China playing vis à vis the U.S.S.R. now. That is, they may perceive China as a potential threat to the U.S.S.R. on a front other than the one they see as their main area of potential military activity, the NATO front in Europe. The Soviets therefore may, so to speak, see Vietnam as "China's China," causing the same problem at China's back door, far from her main "front" with the U.S.S.R. to the north. Neither Vietnam nor China can hope to conquer their large neighbor to the north, but China could possibly seize part of East Siberia and cause the Soviets to fight a large war out there, the area of the worst logistic capabilities of the Soviets. On the other hand, almost all of China's heavy industrial potential (which happens to be located in Manchuria) would be at risk to air strikes in a local war in the Far East, while the great bulk of the Soviet "military/industrial complex" lies far to the west in Western Siberia and Europe. Vietnam is in the same boat--she could not conquer China, and her great ports and heavy industrial centers in the Red River delta are within easy striking distance of the Chinese border. The Soviets and Chinese clearly do not want to fight on the Manchurian border (to date, whenever hostilities there have risen to an unacceptable level they have negotiated); China probably does not want a large war with Vietnam. Even to save the Pol Pot regime in Kampuchea, China made no more than a limited foray into Vietnam, and this Chinese "invasion" triggered no Russian move across the Sino-Soviet border at all. Nonetheless, China can be some threat to the Soviets'

"back door" and the Soviets may indeed see Vietnam in the same role at the back door of China. Furthermore, China may even see Pol Pot's forces in Kampuchea as "Vietnam's China," embarrassing Vietnam there and pinning down her forces on a distant "wrong front."

This whole complex set of alliances within the communist bloc, however, is something the West may not completely understand. Besides Soviet logistic problems in the Far East, etc., we may be running into the limitations of confrontations to which the communist states will go for purposes of countering "schismatic" movements in the ideology (e.g., in Romania) which may be quite different from what they will do when there are external or internal threats of "heresy" (e.g., Czechoslovakia, Hungary and Tibet, recently Afghanistan, and perhaps, if "change" continues or accelerates, Poland) when a definite pro-multiparty political system or anti-communist movement seems to begin to emerge, or already exists.

As far as the "western" confrontations are concerned, we would be highly unlikely to become involved on one side or the other, and the confrontations in the communist orbit (with the possible exception of Yugoslavia) are more likely to seem either like none of our business, or beyond our willingness or ability to act, at least not to the extent of involving U.S. forces.

Then there are conflicts which do not fit precisely into the "ideological" conflict category but where one or both of the contenders may be supported to a greater or lesser degree by one or both of the ideological blocs (e.g., Libya versus Egypt, or the current engagement,

Iraq versus Iran, etc.), or a combination of such support and a nationalistic-religious drive (e.g., Syria versus Israel). We are perhaps more likely to become involved in the latter conflicts, but only if the other sponsor becomes involved.

Currently our government is giving signals (and spending money to arm) which indicate a change not only in declaratory policy but in action policy. Under the present Reagan administration, therefore, a discussion about where the U.S. may feel forced to consider the possibility of U.S. intervention may become more meaningful. This new administration sounds different, as indicated earlier, even on the ideological confrontation issue. They seem to take the dangers outlined earlier much more seriously, and in this respect our government's policies may have come more into line with the attitude of the public (see next section). This, of course, could change the whole milieu in which discussions of force application take place.

There are some things which will not change, e.g., the issue of avoiding collateral damage to civilians will always be with us. Others could be intensified, e.g., the question of the competence of the military force and delivery system to carry out missions is, if anything, likely to receive greater attention because of this new atmosphere with its sense of responsibility and solution-oriented policies. In any event, the military arm which is applied will have an even heavier responsibility to do an exemplary job. It must not again undermine (perhaps for the last time) the resolve of the citizenry to

endorse what we consider to be efforts to support, where necessary even with military force, levels of freedom and human dignity unlikely after a communist takeover. Our military must show a knowledge of the areas and conflicts which are likely to spring up, and a superior competence to handle them "in style" if they need to.

B. The Attitude of the Average American

By 1980, timidity, if it existed in the recent past in the country, may have been more a characteristic of the U.S. "leadership" than the population as a whole. No doubt reflecting the hostage situation in Iran and the Soviet invasion of Afghanistan, in a Gallup Opinion Poll taken between the 25th and 28th of January, 1980, international and foreign problems and foreign policy weighed heavier as "the most important problem facing the country today" than did inflation and the high cost of living, or energy, an unusual perturbation for recent years.* By March 28-31, 1980, it had fallen below inflation, but still ranked higher than energy and employment.** By September 15-18, however, international problems (15 percent) again ranked behind both unemployment (16 percent) and inflation (61 percent).***

According to a Harris Poll of February 1980, there apparently also occurred a great change in attitude, at least at that time, about whether U.S. troops should be involved overseas, e.g., if Western Europe were invaded over two-thirds of the people said "yes," U.S. troops should become involved, compared to somewhat over one-third saying "yes" in 1974. Three out of four people said they would support using U.S. troops if the Soviets try to get the Persian Gulf oil fields, while a majority would favor using U.S. troops if the Russians invaded Iran and/or Pakistan.****

* Gallup Opinion Index, No. 175, February 1980, p. 11.

** Gallup Opinion Index, No. 177, April-May 1980, p. 25.

*** Gallup Opinion Index, No. 181, September 1980, p. 10.

**** ABC News-Harris Survey, Vol. II, No. 25, February 26, 1980. This and all subsequent information from Harris Surveys used with the permission of: Chicago Tribune-New York News Syndicate, Inc.

This was a drastic change from the "normal" U.S. attitude; traditionally the average man has not wanted to send our boys to fight in wars overseas, including in World Wars I and II, though when we enter a war he generally supports the President, at least until the war effort seems ineffective.* (There is no good evidence, of course, that such an "abnormal" attitude would have persisted if fighting had actually broken out in these places. There are reports of polls showing very little support for actually sending U.S. military advisors to El Salvador.)

Furthermore, as Figure 1 based on Gallup data shows, there had been steadily-increasing support for more spending on defense, and this in a time when the general trend in public opinion is against higher taxes and larger federal budgets.

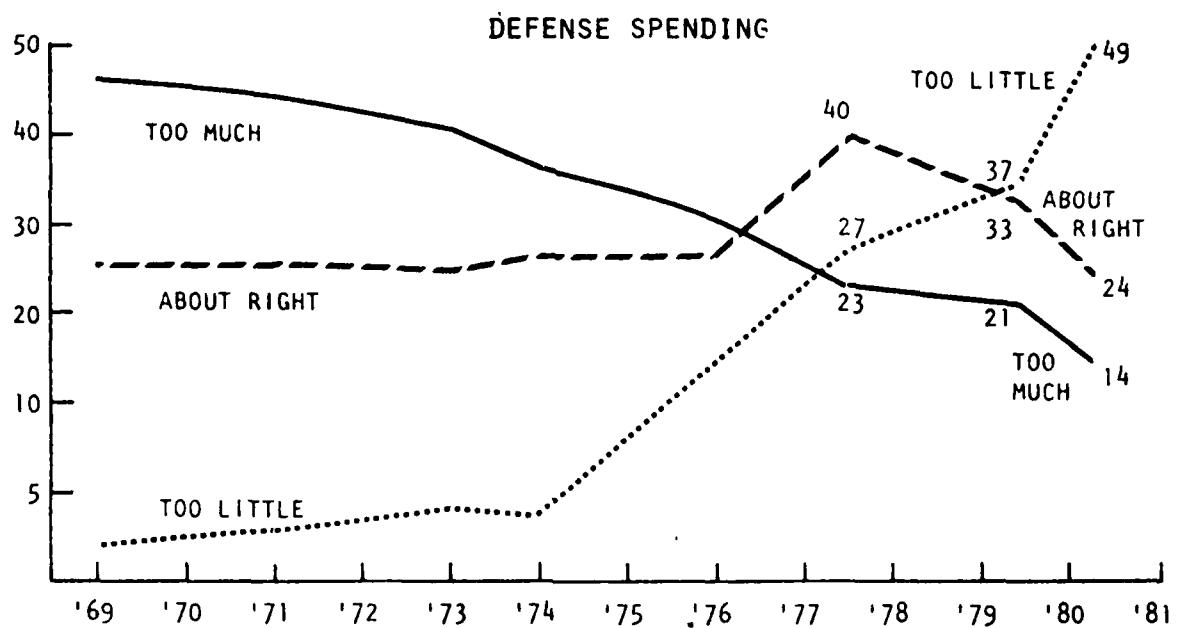
In fact, a Harris Poll taken in February of 1980 (which over time has shown the same trend in the growth of those who "favor increasing" the defense budget) showed 71 percent favoring increasing this budget. Those responding in this way were asked if they would feel the same if such an increase were to cause a rise in the federal deficit to \$48 billion a year, or cause an increase in their personal income tax. In both cases, 83 percent still favored the increase.** In March 1981, while 80 percent of the public favored cutting \$41.1 billion from federal spending, 72 percent favored increasing defense spending by \$7 billion.***

* Frank E. Armbruster, The Forgotten Americans (New Rochelle, N.Y.: Arlington House, 1972), pp. 102-109.

** ABC News-Harris Survey, Vol. II, No. 26, February 28, 1980.

*** ABC News-Harris Survey, No. 18, March 2, 1981.

Figure 1



SOURCE: THE GALLUP OPINION INDEX, REPORT NO. 175, FEBRUARY 1980.

One of the reasons for this attitude is probably that there had been a growing number of people who think that we are weaker than the Soviet Union, despite speeches to the contrary by past Presidents, and in fact in the February 1980 survey, the largest plurality (41 percent) felt that we were weaker than the Soviets (37 percent felt we were "almost as strong"), and an absolute majority (53 percent) felt that it was "necessary" that the U.S. become stronger militarily.* Between 1974 and 1978, those who wanted the U.S. to play a "more important role as world leader" rose from 33 percent to 55 percent.** Meanwhile, those

* ABC News-Harris Survey, Vol. II, No. 26, February 28, 1980.

** ABC News-Harris Survey, November 13-December 1, 1978.

who wanted "to get tougher in dealing with the Russians" jumped from 52 to 67 percent between June 1978 and January 1980, while those who wanted "to try harder to (reduce/relax) tensions with the Russians" dropped from 30 to 20 percent.* By February of 1981, the overwhelming majority of Americans (81 percent to 17 percent) agreed with the statement that "the only way the U.S. can achieve peace is to make the country militarily secure."**

Currently, by 73 percent to 22 percent, people feel that "by sending military aid to countries being threatened by communism and being tough with the Russians, Reagan is sending a message to Moscow that will rebuild respect for the U.S. in the Kremlin," and by 70 percent to 23 percent, feel that "the Russians will only negotiate with and make concessions to an American government which is strong militarily and which consistently will oppose any and all Russian inspired aggression and subversion." They also feel by 54 percent to 41 percent that "the new tough foreign policy might get us into another war."***

In the most important "survey" of all, in 1980, a Presidential candidate who ran on a platform favoring a much firmer stand against communist expansionism of all kinds, and calling for increasing defense spending and not only catching up to but surpassing the Soviets

* Public Opinion, February/March 1980, p. 22, quoting a CBS News/New York Times Poll, January 9-13, 1980. Copyright, American Enterprise Institute. This and all subsequent information from Public Opinion used with the permission of the American Enterprise Institute.

** The Harris Survey, February 12, 1981, No. 13.

*** The Harris Survey, April 30, 1981, No. 35.

in military strength, swamped an incumbent president who had a weaker platform on these issues.

The drop in confidence in the Congress and in the White House as shown in polls in the past few years, and the drop in confidence in the "people in charge of running" these organizations,^{*} may have reflected some of this concern in foreign and military policy, as well as the great concern for such problems as energy and inflation. These same people, however, have continued to have great faith in the country as a whole. In fact, there seems to be an almost spectacular belief among the public in our nation, and the average man is apparently an almost fanatical supporter of the democratic capitalistic system.

Gallup Opinion surveys over the 1970s indicate that when the public was asked how it would rate the United States with a +5 being the top rating and a -5 being the lowest rating, the majority (66 percent in the latest poll, January 25-28, 1980) of the people rated the country as a +5 and just about everybody else rated it at least +4 or +3. The +1 and +2 responses almost disappear in the statistical variation, and the minus responses are basically nonexistent.^{**} Furthermore, when the average American is questioned about whom he most admires, the Gallup Survey finds in its yearly coverage of this issue (begun in 1965) that, aside from the incumbent President who usually ranks first, the other people are usually of strong character and generally are not people who are looked on as non-active or submissive, or even people of the left. For example, a poll taken after the

^{*} See graph on page 31.

^{**} Gallup Opinion Index, No. 176, March 1980, p. 31.

recent Presidential election, but prior to the Inauguration, December 5-8, 1980, Pope John Paul II was first, Jimmy Carter was second, Anwar Sadat was third, Billy Graham was fourth, Ronald Reagan was fifth, Henry Kissinger was sixth, Richard Nixon was seventh, Gerald Ford was eighth, Edward Kennedy (the only Democrat on the list besides President Carter) was ninth, and Prime Minister Begin of Israel was tenth. ^{*} Identifiable certified "doves" never crowd the list.

These trends in attitudes, as indicated by the public opinion surveys, seem to show a concern for our prestige as reflected in events around the world, ^{**} a growing concern over our military strength, and a willingness to try to stabilize the more dangerous situations, perhaps even by the use of military force if necessary. ^{***} As indicated earlier, the average American does not and never has wanted to send our boys overseas to fight, but he is also solution-oriented, and has great faith in the country. The fact that in the recent past he has shown a drop in trust in those who run it does not mean that he believes the country is impotent in crisis situations. As mentioned above, he normally

^{*} Gallup Poll Press Release 12/28/80. Used with the permission of The Gallup Poll.

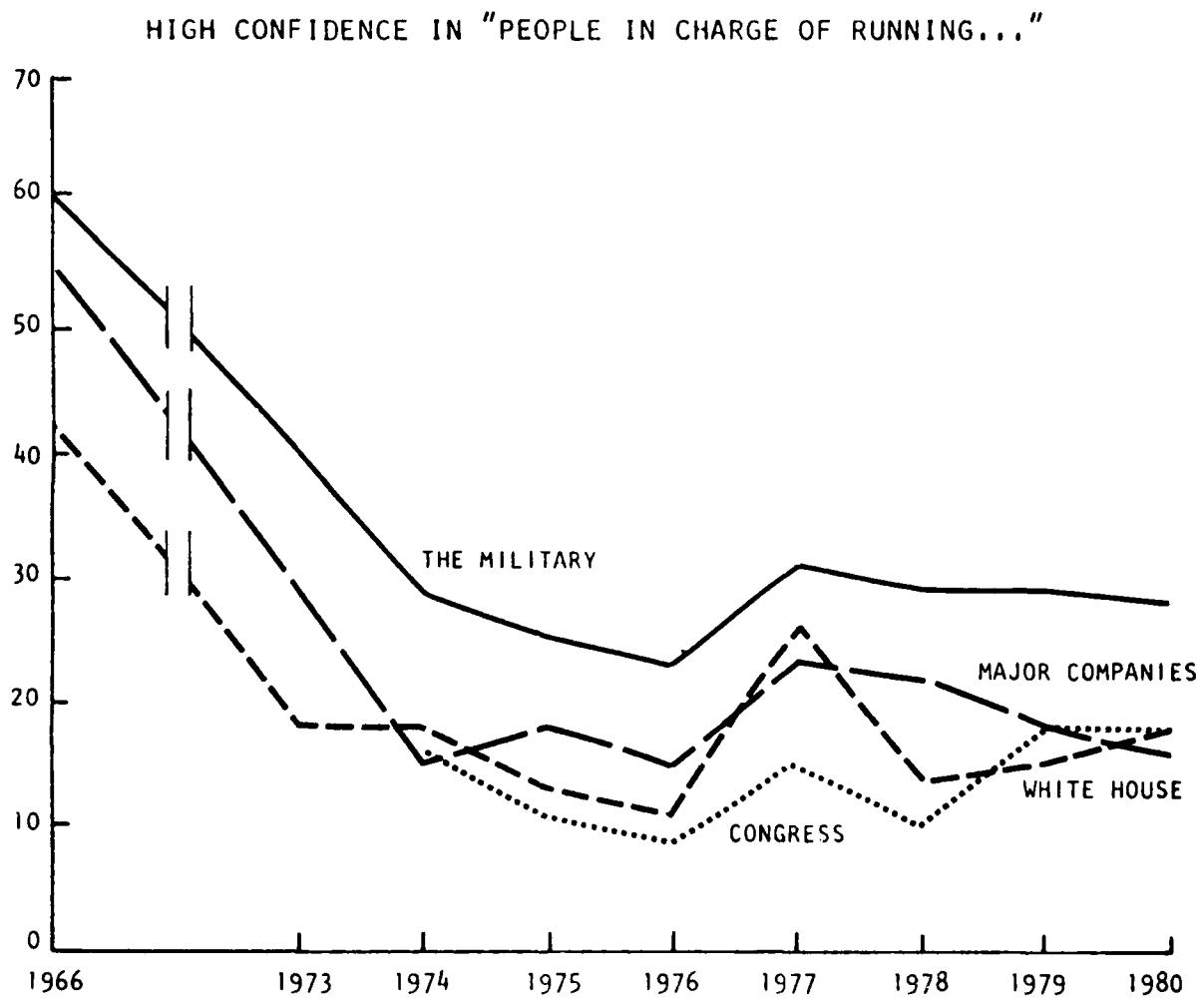
^{**} A survey taken in November 1980 shows 76 percent of the respondents feeling that "the U.S. is respected less than it was 10 years ago." ABC News-Harris Survey, Vol. II, No. 146, November 20, 1980.

^{***} Recent polls have shown the new President with overwhelming support for his policies, which are quite in line with the platform on which he ran, but since most Presidents do well in polls right after entering office, it is too early to evaluate the meaning of this "vote of confidence" in terms of attitudes towards specific policies.

follows the President on international and military issues, partly because their complexity makes it difficult for him to make a decision. But if these Presidential policies seem not to be "solving things," the support for the President even in these areas will probably drop.

What this may mean is that if and when the President indicates that he is about to solve something with a military action, the average American will turn to the military (which incidentally in the past couple of years has rated about fourth from the top in surveys which ask him about groups in which he has "confidence") and expect them to come up with a solution.* (See Figure 2 for the trend in this attitude for the past 15 years.) There probably remains not only a requirement for their developing effective solutions, but constraints on their actions if they do not wish their support to decline. For example, the concern about collateral damage done by military units probably means that the requirement to avoid it will remain. In fact, in addition to looking ineffective, one of the ways for the President and the military to lose support for their actions is to have the foreign and local press and electronic media release stories on damage to civilians, excess bomb tonnage dropped, or even unnecessary casualties of other kinds, etc.

* In the past few years Congress has tended to be about fifth from the bottom and the White House about second from the bottom in the "high confidence" area (on a list of 13 organizations).

Figure 2

SOURCE: ABC NEWS - HARRIS SURVEY, VOL II, NO. 147, NOVEMBER 24, 1980.

C. The Force Application Environment of the 1980s^{*}

In this world the probability of flashpoints occurring seems to be rising, and with the evidence that the average American is becoming edgy over the international situation, and considering his "solution oriented" approach, timidity on our part may become less popular in the not too distant future. (In fact, the U.S. government is now beginning to respond to this attitude to some degree.) Furthermore, though the average American may desire, and even insist, that our allies pull their share of the load, the chances that it will occur (even in an area so vital to Europe and Japan as the Persian Gulf) may remain very small indeed. (We may in the not too distant future begin to look at the large number of military personnel we keep in Europe as a source of that 100,000 man quick reaction force we want.) This could lead one to the conclusion that in the confrontations in many parts of the world, U.S. and/or friendly forces with whom we have had little experience (and perhaps even about whom we know little) will form the shield of military opposition to various levels of aggressions. (As will be discussed later, factors such as this are of particular importance in a study such as this because, among other things, the relative effectiveness of delivery systems and both free-fall and precision-guided munitions may change drastically when they are used by such foreign air force personnel, perhaps even flying

* See Appendix B for a short discussion of some of the types of technical and other issues which in the past impinged on this environment and may again (at least by the 1990s), but which were not specifically identified as influencing it in the main body of the paper.

non-American aircraft. This becomes an issue in supplying munitions to, and stockpiling them for, combat air units of countries with which we have not worked closely in the past. It would, of course, be less important in the calculations if we are discussing activities by close allies such as the NATO forces, the Republic of Korea, Japan, and even Taiwan, who use our equipment, whose competence we know, etc. As stated above, however, with the attitudes of most of these countries what they are, most of these forces are unlikely to be used outside of their home areas. Though perhaps this situation could change.)

Nonetheless, the U.S. forces and their allies will have to not only be effective in defending the victim states but will have to function within the moral, ethical and legal constraints strongly endorsed by the United States. Nor is this a consideration "outside the political sphere." Collateral damage, for example, will always be a factor in the decisions governing force application and even evaluations of free-fall versus guided weapons (or no air strikes at all). Less concrete factors could also affect the image of the U.S. (or its allies) in domestic and foreign news media, e.g., the additional bomb tonnage of the strikes against the Ho Chi Minh trail in the forests of Laos and South Vietnam cost us dearly politically because people began to add up total Vietnam War bomb tonnage and compare it to World War II, etc., even though the strikes against this logistic route were primarily against uninhabited forests and morally and ethically most of the strikes may have been acceptable. In addition to the moral reasons, therefore, for political purposes it is often better to do things with only a few sorties with expensive weapons

systems, even against low-priority targets where no collateral damage is involved, rather than give the image of clouds of U.S. (or allied) planes dropping many tons of bombs on a few (particularly non-white) "Third World" regular or irregular troops, regardless of how vicious they are, and what depredations they will cause against innocent women and children if they or their weapons get to the kick-off point. (Such moral and political reasons inhibited military operations in Vietnam--oftentimes justifiably--more than all the North Vietnamese air defense systems, and there is at least one report that the hostage rescue mission in Iran was scaled down by the President to try to hold down casualties.*)

Furthermore, force application "done in style," cleanly, expertly, with minimum effort and seeming ease, can be extremely valuable in the military sphere. It can raise the morale and self-estimates of expertise of one side and lower them for the other side. If done often enough, troops on both sides begin to expect such results as a matter of course, and the "less expert" side is likely to be consistently intimidated, if not terrorized, and defeated by inferior numbers of the "experts." (One of the most outstanding examples of such behavior was the consistent success of surprisingly small numbers of 16th century Spanish pikemen against vastly superior forces, on both sides of the Atlantic. In modern times, World War II German ground forces displayed a great ability to intimidate and defeat numerically superior European forces, while

* See William Safire's column in The New York Times, April 28, 1980.

Japanese ground forces showed similar capabilities against Asiatic troops. Israeli troops have had a like reputation versus Arab troops. Had the small U.S. rescue force sent to Iran pulled it off, the effect on Iranian morale may also have been severe.)

As a rule, air-delivered weapon strikes are normally broken down into several missions: air supremacy, sea control, and sea LOC interdiction, close air support, battlefield interdiction, and deep strikes against industrial and transportation targets which support the enemy war effort. The first two missions are self-explanatory--to gain and maintain control of the air on both sides of the FEBA and over vital ocean areas, with all that this means to the ground and sea forces on both sides. The close air support role is rather obvious also--close air support to ground troops plays the role of extremely mobile "flying artillery," able to concentrate fire on threatening enemy troop concentrations, tanks, etc. Strikes against dumps, bivouac areas, and attacks against the rear, war-supporting industrial and transportation facilities also are self-explanatory, but they, and in particular the latter, may be much more likely to entail high risk to non-combatants if weapons without precise CEPs are used. The aim of deep air interdiction attacks and the necessary concomitant military actions, however, seem at times not to be that obvious.

The aim of such interdiction attacks, of course, is to reduce the deployment of enemy troops and movement of materiel to the front to a level where his combat capability is below that which the friendly forces

can bring to bear on him. Despite some opinions to the contrary, at least in the case of ground LOCs, it is seldom, if ever, to reduce such traffic to zero, primarily because this is usually impossible. (This is particularly true if there is contiguous land connections to the source of supply, or a "sanctuary" trans-shipment area.) The aim is to slow down the movement. Because of this we cannot wait for the enemy to "die on the vine," nor can we allow him to choose the level of combat activity, or he will never exceed his diminished logistic capability and thus interdiction attacks are almost certainly doomed to abysmal "failure." In the meantime the "negotiation/fight" wars we engage in these days can be lost.

To be effective, interdiction attacks against ground LOCs almost invariably must be accompanied by continued or stepped-up ground attacks on the enemy to make him use up his precious materiel and/or retreat. This often provides the opportunity to turn the retreat into a rout, and a disaster for the enemy. (Perhaps the best example of success with such a combination by Americans, or at least the one mentioned most often, was the interdiction attacks prior to, and during, the large ground invasion and offensive on and after D-Day in 1944. The American air and ground attack in Korea in the spring of 1951 was also extremely successful until we agreed to stop and "negotiate.") In fact, if the ground attack is pressed home in conjunction with an interdiction attack, the enemy often loses not only firepower, but mobility and the power to maneuver or even run--he simply "runs out of gas." At this point friendly armor can run around and through him. Or one can bypass enemy units and run for "strategic objectives."

Some may feel that such a discussion as the above should be unnecessary but in our last two wars, in Korea after the spring of 1951 and in Vietnam, we failed to coordinate sizeable ground offensives with the peak of interdiction campaigns, and we allowed the enemy to choose the level of combat. At least partly due to political decisions and constraints, we almost seemed to go for the very expensive, frustrating zero-supply interdiction attacks as the winning tactic. Just about no conventional weapons system, almost regardless of how sophisticated its guidance systems, etc., can overcome such basic tactical errors. This paper assumes that no such process will occur during attacks implicit in the "battle-indicative" scenarios which it contains.

IV. GENERAL TARGET CATEGORIES AND DELIVERY SYSTEMS

A. Air Supremacy Target Systems

Target categories required to be hit by fixed-wing aircraft in the roles and missions mentioned earlier are generally self-evident. Counter air strikes will be against runways and the aircraft themselves whenever they can be reached. The POL and ammo dumps supporting the air units as well as the "pipeline" of planes all the way back to the aircraft manufacturing plants, and the plants themselves, as well as critical component parts plants, have traditionally also been targets in this attack. The initial attack would have to be very effective to largely accomplish the goal of quickly gaining control of the air over the battlefield; in fact, the best results will be obtained if the "first wave" at least pins down the enemy air until succeeding "waves" can take out the planes. The weapons and the attack mode are important here for a successful attack. These targets are relatively small, the runways are often rather "hard," at least the smaller planes are often under cover or revetted, and the bases tend to be heavily defended with anti-aircraft systems. (In some cases even smooth turf may have to be cratered if planes can take off from it.) Of course the civilian collateral damage avoidance restrictions are also encountered with these targets, but generally they tend to be less severe and frequent because the bases are usually large, and runways and planes somewhat remote from populated areas. (V/STOL installations, of course, can be relatively small.)

B. Sea Control and Sea LOC Interdiction

(This section assumes that, in general, targets to be engaged in this mission will be distant from population, as indeed most such targets will be at sea. If, however, they be in port or for some reason cannot be identified among swarms of fishing boats and other civilian craft, then the same type of collateral damage restrictions mentioned in other parts of this section apply here too.)

The sea control mission is likely to involve a wide variety of naval targets. Typically, the Soviets supply their client states with fast missile-armed patrol craft such as OSAs and KOMARs; these present a threat to carrier battle groups where their primary mission is land attack. Carrier operation in very limited wars therefore requires the destruction of the enemy's fast missile boat forces as a precondition; otherwise the carriers and their escorts will be subject to continuous harassing fire. Many navies also operate destroyers and frigates, some of which are armed with short- or medium-range ship-to-ship missiles. These present a further threat in that they can operate well out to sea, forcing the carrier and her consorts out to extreme aircraft range--unless they can be destroyed early in the campaign.

It should be emphasized that ship-borne weapons are unlikely to be the only or even the primary threats to U.S. naval operations in Third World contexts. Air attack, in some cases by Soviet-type naval bombers (BADGERSSs, BLINDERs, perhaps BACKFIREs in the future) as well as by fighter-bombers armed with stand-off weapons (e.g., the Anglo-French Martel) will be far more important threats. Most minor navies also

operate one or more submarines. In a typical campaign, the carrier would have to (i) neutralize enemy airfields, (ii) destroy the enemy's surface attack force, and (iii) conduct ASW operations, probably including ASW mining of enemy submarine ports. All of these are pre-requisites for the type of carrier air support common in Korea and Vietnam. In practice, they would have to be done simultaneously with air support of land operations, and it would be essential to achieve the greatest possible economy in sorties per naval target destroyed.

Sea control operations in a limited war probably also include the interdiction of coastal or even of convoy traffic, again as in Vietnam. Requirements here include the ability to sink merchant ships down to the size of small craft with maximum efficiency. However, it is likely also to be essential that the attackers be able to distinguish enemy targets from innocent neutrals. In limited operations in the past, rules of engagement have played a most important role. One might argue, then, that the ability to acquire some target and to destroy it at very long range may not be very useful in a limited operation. In other cases, of course, all merchant shipping in an area may be considered unfriendly and subject to destruction, and long range may be the difference between unacceptable losses and economy of force.

Finally, some current trends in Soviet policy suggest that by the end of the present decade the Soviet fleet may be quite willing to interpose itself between a U.S. carrier battle group and its Third World target area, in which case the first requirement of successful operations will

be the destruction of a large Soviet surface fleet. Thus, even limited warfare options run the gamut from the smallest torpedo boat up to carriers such as the Kiev and Moskva.

Of course, in a general war between the U.S. and the U.S.S.R., Soviet fleet units of all types of naval craft would be involved.

There are two alternative characterizations of ship targets. One is by type encountered, the other by available weapon effects, i.e., by attack weapons. Thus, one might divide ships into large warships (e.g., Kiev or the new Soviet nuclear cruiser Kirov); merchant ships which approximate large or medium warships in size (such as freighters or container ships or tankers), medium warships (e.g., NANUCHKA through OSA), and submarines. The latter are important because some classes of Soviet missile submarines (ECHO II, JULIETT) must remain at least awash during a large percentage of the flight time of their long-range missiles. These categories differ in ease of target acquisition based on size and radar reflective areas; in the immediacy of the threat they present to friendly naval forces; in their capacity for self defense; and in their vulnerability to various types of attack.

Very crudely, there are three forms of attack upon a ship. The ship can be hit above the waterline, generally with the object of disabling her or, more remotely, of starting a fire or a chain of explosions which may destroy her. Classically, gunfire had this effect; so did dive bombing. Alternatively, she can be hit below the waterline with the object of letting insufficient water to sink her. This is the objective of torpedo attack, as well as of some forms of rocket attack. The third alternative is the

disabling or destroying near miss. A large explosion in the water near a ship tends to send a shock through her entire structure, shattering rigid structures such as engine foundations, and flexing the entire hull of the ship. Depending upon how carefully she has been designed to withstand such damage, a ship may be totally disabled by shock. For example, internal hard points may be driven through decks. Splinters from shattered structures may fly through the interior of the ship, killing her personnel. An under-bottom explosion is a particularly destructive example of a near miss. If even a relatively small charge is exploded along a well-defined contour beneath a ship, the gas bubble formed by the explosion rises to hit the keel as it pulses. The blows from the bubble bend the girder represented by the entire hull of the ship, frequently with sufficient force to break it in half. Indeed, it is often suggested that an under-bottom attack is by far the most efficient use of explosives against a ship. The principal countermeasure is a soft bottom, which allows the gas bubble to vent as it hits the keel. In effect, very severe flooding is accepted as the price paid for bare survival. Even this defense is available only to very large ships of roughly aircraft carrier size.

The economy of effort involved in an under-keel explosion is such that at present the traditional contact torpedo is considered almost obsolete by comparison. It seems relevant to note that modern concepts of such attack, except by bottom-laid mines, appear to have originated with the Germans, who saw the tactic as an efficient means of attack against ships by dive bombers. It did not require quite the same degree of precision as did a conventional dive attack intended to hit the rather small deck area of the ship, and thus had a much better chance of success.

Large war and merchant ships are of about the same size, and therefore should present about the same degree of difficulty in target acquisition by active radar. Large warships will probably be radiating in wartime, and therefore may well be acquired by passive means (ESM); in addition, they may identify themselves by the characteristics of their specialized air defense radars. It seems unlikely that the commander of such a ship in wartime would be willing to rely entirely on passive means for his protection. The U.S. Navy differs from others in this respect, in that a battle group with E-2s overhead can operate silently in the expectation that the airborne early warning aircraft will themselves provide active warning without giving away the location of the ships in the task group.

Otherwise, the two categories differ dramatically. The average large merchant ship is quite vulnerable to underwater or shock damage, although topside she may well be able to take considerable damage without burning or sinking. Oil tankers are an exception to this rule. Since, loaded, they are already filled with a substance close to sea water in specific gravity, flooding is of little moment. However, fire is a serious danger. An unloaded oil tanker is susceptible to explosion, given the residue of oil and oil vapor in her tanks, and may break up if she floods partially, particularly in a seaway. In either case, self-defensive weapons are likely to be limited to very short-range missiles, perhaps of the SA-7 or SA-8 variety. In convoy merchant ships of course come under the protection of destroyer or even light cruiser area defense weapons, but it is not at all clear to what extent current Soviet area SAM systems are

suited to this task. These remarks generally apply to naval auxiliaries and to amphibious ships as well as to true merchant types. There is one important caveat. It appears possible that Soviet-designed merchant ships are built to considerably higher standards of wartime survivability than are Western-designed ships.

Large Soviet-bloc warships are of course more survivable and in addition they present far more difficult targets: they are faster, they are likely to maneuver radically, and they are provided with thick air defenses. On the other hand, the Soviet practice of mounting large numbers of offensive weapons topside cannot contribute to survival under attack. The case of the missile destroyer which sank after a fire in the Black Sea suggests deficiencies either in design or in actual damage control practice. Naval design standards should limit the value of near misses, and in a ship as large as the Kiev a soft bottom might negate the effects of anything but the most powerful and best-placed bottom charge.

It appears, too, that modern warships may be most vulnerable to an attack which begins with some form of ARM neutralizing their topside electronics. Limited battle experience suggests that even a relatively small charge may damage search and some fire control radars so badly as to leave a ship nearly defenseless. In the case of the Kiev, for example, the only remaining survivability features might be speed, maneuverability, and the passive features of the hull and superstructure, such as armor and compartmentation. The ARM would be far from sufficient actually to destroy the ship, but it might open the way for topside bomb or PGM assault. World War II experience suggests strongly that in an attack on

a swiftly maneuvering ship, the most important factor is the time lapse between the last moment during which the bomb can be controlled and the moment of impact. That is, accuracy was worst for level bombers, best for dive bombers which typically dropped their weapons at high speed at about 2,000 feet. In theory, a PGM should be considerably better than a bomb delivered in a dive, except that it may be possible to spoof an EO bomb more easily than a pilot in a dive. In each case the effect of defensive fire has been ignored, of course.

Light cruisers and lesser warships are unlikely to have the compartmentation of a Kiev, and in addition are likely to be quite vulnerable to under-bottom explosions, if the bombs can be delivered sufficiently precisely. In addition, given their lesser size, topside explosions are more likely either to be fatal or to disable defensive weapons and sensors. Generally, too, medium warships can engage only two or fewer aircraft simultaneously, making coordinated bomb strikes more profitable. On the other hand, a fast destroyer or light cruiser may be far more maneuverable than a Kiev or Kirov, and thus may be able to evade diving bombs, just as such ships were able to evade torpedoes during World War II. The usual tactical countermeasure at that time was a simultaneous attack from both sides ("hammer and tongs") and this may continue to be relevant.

The small (and complex) silhouette presented by a medium warship is a real problem. For example, in a convoy, the most easily acquired targets may well be merchant ships, whereas destruction or at least neutralization of the convoy screen may be a precondition for actually attacking them. An additional problem in convoy strikes may well be proper distribution

of hits over all the escorts; this issue, too, arose frequently during the early phases of World War II; undue concentration of fire on one or more escorts would allow the others to escape. In a modern context it might well allow the others to concentrate their fire on the attackers.

A destroyer or frigate is the smallest warship which can oppose an air attack with meaningful fire, and it is also the smallest warship not subject to fatal damage from ordinary near misses. On the other hand, it is not nearly as maneuverable as a fast missile attack boat.

The destruction of a fast patrol boat requires above all the ability to hit a very small, rapidly maneuvering target. Typically, miss distance is determined by the time interval between weapon release and impact, for a free-fall weapon. For a PGM, the probability of hitting may well depend upon the ability of the boat to steer in such a way as to decoy the weapon off target during its trajectory. For example, a contrast-seeking EO weapon may well tend to home on the vivid iridescent wake of the violently maneuvering target. The fast missile boat is so small that it may well be able to evade attack by radar or IR seeker because the average decoy may have a much larger radar or IR signature. Very large weapons, however, may be able to cause severe damage through shock.

There is an important caveat. Foilborne fast attack craft and surface effect craft may be largely immune to near misses in the water. At least in the case of a surface effect vehicle, it appears that not even under-the-keel damage will be significant. The same is probably true of the hydrofoil, as the limited underwater area of the boat permits

the gas bubble to vent. It is not entirely clear whether a similar statement would be true of a planing hull, which also presents only a limited surface in contact with the water.

Surface submarines are a limited but very significant target class. There are two important cases: (i) damaged boats proceeding on the surface; and (ii) Soviet long-range missile types (ECHO II, JULIETT) surfaced either to launch their weapons or to provide mid-course guidance by transponder. The first is more likely to characterize a limited naval war. Most U.S. ASW weapons employ a Mark 46 torpedo, whose relatively small warhead is far more likely to damage than to sink a submarine. It would appear to follow that submarines may sometimes have to proceed home on the surface, where they are easily detectable by aircraft, but also where additional Mark 46 hits are unlikely, as this weapon is optimized only against submerged targets. Air-launched rockets may be the best weapon for this case. The point worth making is that submarine construction almost automatically confers improved hardness against near misses, so that only hull penetrations count as useful damage. Moreover, a submarine on the surface can still fire her torpedoes and therefore is still capable of offensive action, unless she is destroyed.

Case (i) requires fairly, but not extremely, prompt action. Case (ii) requires great promptitude, but on the other hand a missile attack may be quashed by relatively minor damage to the submarine, either to its missile compartments or, if the weapon is already in flight, to the radar transponder antenna in its sail. Even an attack which merely forces the submarine down for a few minutes may well be effective--if it is delivered very promptly.

At present, submarines are relatively easy targets, since they carry no defensive armament and are not maneuverable on the surface. However, they can evade attack by diving. In addition, it seems possible that within the next decade many will have some form of air defense, comparable, perhaps to the extemporized hand weapons to be found aboard some fast patrol boats. For some years, for example, Vickers had offered its SLAM, derived from the land-based anti-tank BLOWPIPE. SLAM-like weapons would seem to suggest the viability of PGMs rather than free-fall bombs in the future, but it might be useful to keep in mind that the long range of the PGM in itself provides considerable warning. Submarines are well equipped with ESM gear, and a very long range PGM incorporating a data link might be detected by that gear, rather than by optics or by radar.

C. Close Air Support of the Battlefield

The targets to be hit here are the traditional ones, tanks, artillery (including surface-to-surface missiles), C³ and other bunkers, troop formations, APCs, etc.

The question of the delivery vehicles and munitions for the close air support mission, particularly over the North European plain, however, may be a wide-open issue at the moment. Not only the tactics but even the type of vehicle to be used is being questioned. When there are discussions about fixed-wing aircraft there is a significant split between the European ideas of basing and attack patterns and those of the U.S. The Europeans seem to feel that the whole thing should be kept simple with aircraft based forward and flying low and fast in order to avoid enemy battlefield anti-aircraft systems. On the other hand, they admit that in the European theater, without weapons which can take out anti-communication jammers, close air support of a battlefield would be extremely difficult if not impossible because of the Warsaw Pact radio frequency jamming capability up to 10 miles behind the NATO front.^{*} Under these conditions, the forward air controllers cannot vector the fixed-wing aircraft onto targets which, it is asserted, calls into question their use in the close support role. Random hunting can still go on, but this mode is likely to be less helpful to ground troops. It is the most threatening enemy armor the boys on the ground would prefer to have taken out, though, of course, they would welcome the knocking out of any enemy armor.

^{*} Wing Commander Jeremy G. Saye, RAF, "Close Air Support in Modern Warfare," Air University Review, January/February 1980.

Random hunting is not only likely to be less productive, but since the planes will have to gain some altitude to increase their range of "vision" to spot targets it could be much more dangerous in the lethal anti-aircraft environment of the North European plain. In addition, it is admitted by all concerned that the weather in the North European plain is quite likely to make visual contact impossible a good period of the time. With heavy, low hanging cloud cover and visibility of less than 2 kilometers, which is quite common (particularly from November through March), fast-flying aircraft may have little capability to acquire targets in time to carry out an attack in one pass. If they could make two or more passes they may have a better chance, but it is generally felt that this is dangerous. Furthermore, at least one author, apparently with considerably experience, states categorically that "the unique problem of weather for close air support aircraft is that battlefield targets are not, for all practical purposes, radar-identifiable."^{*} Others do not talk of such problems, but rather mention such things as the navigator (of a Tornado) "aiming and the laser range-finder...ranging on the target position to give the weapon system very accurate plan range and aircraft height." Since this was not when the pilot could "see the target," presumably the target would be acquired by radar (unless it is assumed to be illuminated by a laser, which means a ground-mounted laser because this aircraft was "down in the weeds" on its approach, "following the ground contours as closely as any aircraft at 600 knots can do"). It is not clear how one uses radar and FLIR to actually

Say, Ibid.

^{*} John David Eagles, "Flying an 800-Knot Tornado," Air Force Magazine, June 1980, pp. 53-54.

acquire targets at such speeds and low altitudes, particularly in a cluttered battlefield area, but we do not intend to examine such problems in this paper.

The American approach to close air support is somewhat different, even though with the new A-10 aircraft which can take off from 2,400 ft. runways, there is a capability which is somewhat similar to that of the British V/STOL Harrier aircraft. The tactics proposed by the Americans are what differ considerably. Rather than just using a few or even pairs of aircraft, which depend on flying very low and very fast, and maneuvering to avoid the enemy anti-aircraft defenses, the Americans visualize sending flights of considerably more ground attack planes (e.g., 10) over, accompanied by even greater numbers of other aircraft (e.g., 20) assigned to suppress the enemy anti-aircraft defenses (and one would also hope, at least eventually, to suppress their radio jamming stations). This should change the environment somewhat so that the A-10 can, at least in the attack mode, fly somewhat slower and higher, and with a somewhat better chance of identifying and hitting targets, and perhaps eventually even having a better chance of forward air control guidance to the target. (One should also not overlook the possibility of our armor helping out. In actual combat, particularly armored combat, neat stable fronts often do not exist; the situation is likely to be "fluid" and "dynamic." If one or more of our armored units should break through and sweep back among the longer-range enemy SAM batteries, his armor ahead of these batteries could be vulnerable, visibility permitting, to long-range, stand-off PGMS.)

It is clear that this kind of close air support dispute, including that of how the aircraft should be based in order to survive the Warsaw

Pact counter-air attacks, is a highly complex one and requires the most detailed types of examination, including the scenarios under which these battles are supposed to occur. There apparently are some who are ready to give up the close air support to helicopters because these vehicles are supposedly less susceptible to jamming of their communications equipment, and therefore can work with the forward air-controller and thus be more effective anti-armor vehicles.*

This concept itself may be questionable, however, because, for example, it seems that when these helicopters are "war gamed" at least on some occasions it is against only the radar-controlled indigenous anti-aircraft equipment of the Soviet armored units which they are attacking. If, however, these helicopters venture beyond our FEBA, they will probably be the targets for every weapon that can fire at them, including the thousands of 12mm machine guns that are likely to be on, and behind the Soviet FEBA. In effect, this means that these helicopters may be followed by streams of converging tracers that point out their location long before they get within range of their intended target, even though they may be following the "nap of the earth" in their flight. This could mean that they would be "precisely" located long before they "pop up" over the horizon and show up on the radar of, for example, Soviet quad 23s. In fact, they may fly into an already established hail of light anti-aircraft fire of several calibers immediately before and just as they pop over the tree line horizon.

* Saye, op. cit.

This, however, is another issue which in due time will undoubtedly be debated, and if they are not already included, perhaps these variables will be introduced into the gaming of the attack helicopters.

In the meantime, if indeed all types of close air support aircraft lose much of their role near the FEBA, one may again have to rely on anti-armor weapons based on ground vehicles. In the forward edge of the battle area, this is normally where all the tank kills come from anyhow. In fact, it is usually tanks which kill other tanks, and it is possible that we may see this again in large armored battles on the northern plain of Europe.*

It might be possible if the weather were clear enough, and if the Soviets can actually get as much armor concentrated at the FEBA as some people say they can, that just random hunting by close air support aircraft might keep the planes busy with just about all the ordnance they can carry to the front. In other words, the way some people describe the area of a Soviet drive, the ground might be black with tanks so that just about anywhere close air support penetrated the front they would find targets. Of course, in facing less well-equipped military forces in other areas these issues would become less pressing. These other forces are equipped with various levels of AA equipment of Soviet or other origin, but they generally are likely to have less of it and, despite foreign "advisors," generally are likely to be less competent in using it. Nonetheless,

* In the most recent huge tank battles, in the Mid-East in 1973, anti-tank missiles received the publicity, but master guns of Israeli tanks accounted for most of the Arab tank losses. Michael Carver, War Since 1945 (N.Y.: G. P. Putnam's Sons, 1981), p. 271.

non-Soviet units in, for example, the Middle East or Africa, if heavily supplied with air defense equipment (and particularly if East Germans are manning it) could pose a significant threat to fixed-wing aircraft, at least in certain sections of target regions.

D. Battlefield Interdiction Target Systems

In the battlefield interdiction area, there is less debate than in the close support area regarding effectiveness, even in Europe. Troops and armor moving up to the front in a column and not yet deployed are generally on the roads. Pilots of the planes normally know where these roads are, so clearly they will know where the columns are more likely to be. Furthermore, the forward air controller communications problems are less likely to apply here because the planes are more likely to be beyond the area that the FAC can see. Back in that interdiction area, depending on the current intelligence, weather, etc., the chance of finding columns of tanks on one's own should be quite good, but again, particularly in a place like the northern European plain, the air defense environment is going to be extremely dangerous. Some of the battlefield anti-aircraft missile systems are themselves quite long-range and even fixed-wing aircraft launching the longest range stand-off weapons, particularly if they require the aircraft to maintain visual contact with the target, might still require the weapons platform to be within range of the Soviet SAM system. In good visibility, with enough ECM and other protection against longer-range threats to the launch platforms, a long-range stand-off weapon might still be more desirable. As mentioned earlier, visibility is one of the difficulties on the North European plain. (FLIR systems can help here, but there are going to be vast numbers of civilians and military vehicles of all types, and many other heat sources, to say nothing of obstructions like buildings, trees, rain squalls, etc., on that crowded North European plain.)

Other potential battlefields are quite different from Europe. Some almost always have good flying and observation weather (though they sometimes present other difficulties). Others have periods where flying conditions are much worse than Europe, while most have quite different topographic and meteorological conditions. Demographic, transportation, communication factors, etc., of course, normally differ greatly from Europe.

The battlefield interdiction role is one where most people would probably agree that, even in Europe, there may be some room for both types of fixed-wing aircraft operations mentioned earlier, that is, low-flying aircraft coming in at great speed right over a road might be able to catch a column on that road and deliver its weapons, including cannon fire and even cluster ordnance, before the anti-aircraft systems indigenous to the column, or otherwise in the vicinity, could degrade their CEP excessively, drive them off or prevent them from either delivering their ordnance or escaping. On the other hand, tank-killing aircraft covered by air defense suppression and ECM aircraft might expose enemy columns to quite successful attacks by these hunter aircraft, using stand-off PGM weapons, if the weather were clear, or coming in quite low and more slowly shoot up the tanks with cannon or PGM rocket fire. In densely populated Europe, or even large parts of Ethiopia, Thailand, El Salvador, etc., however, collateral damage can become an equally important factor in the choice of very accurate weapons, in this case to guarantee avoiding indigenous population or even refugees on the roads during strikes.

There are of course other dangers back in this area of battlefield interdiction, particularly if these more elaborate penetration tactics

are used. This danger comes primarily from enemy fighters which might at least engage the aircraft doing the air defense suppression mission. Control of the air over the zone immediately behind the battle area, therefore, maintains its traditional importance in the battlefield interdiction operation. Even in the heat of such a battle, however, collateral damage issues will loom large in strike considerations, particularly in densely populated areas such as Europe. (From a tactical military point of view, also, attacks on armored columns, etc., in isolated areas is preferable. Buildings simply make the targets too difficult to acquire and hit.)

Depending upon the geographic details, there may also be some fixed targets in the battlefield interdiction area which might include some bridges or some roads which might lend themselves to cutting, fuel and ammo dumps, etc. In general, however, many targets in the battlefield interdiction operations are quite similar to those in the close support operations, that is, they are the combat vehicles themselves along with their support vehicles.

Here again, all the problems connected with close air support and battlefield interdiction mentioned above would be most intense in an area like the North European plain, and against an army like the Soviets'. They would be decreased by a wide range of degrees if the battle were taking place elsewhere. As mentioned earlier, the Soviets generally send "advisors" in with their equipment, and in certain cases these "advisors" (e.g., Cubans, Koreans, or even East Germans) actually operate

the equipment in combat, and sometimes the equipment given to the proxy power is relatively sophisticated. To repeat, however, in general the air defense that one would encounter on a battlefield fighting, for example, "Third World" allies of the Soviets would not be nearly so severe as that encountered on the North European plain, and often collateral damage problems may decrease because of the long stretches of LOCs through isolated areas. As battlefield anti-aircraft defense decreases, of course, the role of the fixed-wing aircraft in close air support and battlefield interdiction increases, often dramatically.

E. Deep Interdiction Target Systems

The deep "retardation" and interdiction role involves the obvious targets: bridges, particularly over significant water barriers, supporting transportation facilities such as railroad motive power depots, classification and other railroad yards, particularly those used as "control points" for enemy troops deploying to the front (though these targets are also important ones in the battlefield interdiction target category), some less traditional ones, e.g., landslide areas along the LOCs, as well as truck parks and repair points, fuel and ammo dumps, etc. (Many of these targets will have from considerable to very heavy anti-aircraft protection.)

Interdiction targets which are well defended and are in populated areas probably should be hit by precision-guided munitions. Even targets which are somewhat less well defended by anti-aircraft weapons but are "hard," requiring direct hits on relatively small areas, are probably best hit by precision-guided munitions from the cost-effectiveness point of view. It would simply take too many sorties going in too close to release free-fall weapons even if the targets were in places remote from populated areas. (E.g., railroad bridges are very hard targets which must receive direct hits from very large ordnance to drop a span, stone and concrete arch bridges by the very nature of their construction are often hard, etc. Furthermore, there is a range penalty when aircraft are loaded down and their configuration is dirtied up with a lot of heavy free-fall weapons. One or two aero-dynamically more acceptable PGMs, if they delivered the same penetration and explosive power of the bombs, could stretch the legs of the aircraft greatly. On the other hand, a target which required a great deal of tonnage would require a large number of PGMs and perhaps sorties.)

The non-hard logistic targets mentioned above, particularly such installations as open storage POL and ammunition dumps which cover large areas, and are likely to generate secondary explosions which could be quite destructive, from even a single hit, are normally going to be covered by adequate anti-aircraft weaponry which makes approaching close to them quite dangerous. If such targets can be found not to be so protected, but primarily depending rather on passive defense, e.g., camouflage and spoofing techniques, and if specific aiming points for PGMs cannot be acquired and good accuracy is not required to avoid certain points because of the danger of collateral damage, they could be candidates for free-fall weapons. If they were in desolate areas and the aiming points are truly random within restricted boundaries, they may even be candidates for high level, free-fall weapon use, thus reducing the danger from tube anti-aircraft weapons.

Some impressions to the contrary, the same thing cannot be said so often about other "soft" logistic "area" targets such as railroad yards, motive power service and repair facilities (these latter may be considerably smaller in size), truck parks, repair depots, etc. Difficulties often arise in this kind of targeting because there are usually key points of the target which, if taken out, could magnify the effects of the attack. If these aiming points can be acquired, this then calls for the kind of accuracy which free-fall weapons are often incapable of delivering. Furthermore, these targets, particularly those associated with the indigenous transportation systems, are oftentimes likely to be located in relatively built-up areas, so the collateral damage problem will reduce or eliminate the applicability of free-fall weapons.

Other targets concerned with the interdiction roles may be less obvious particularly if, as was indicated earlier, rather than completely stopping all military traffic, interdiction is looked on as a slowing down of the movement of men and materiel to the front to a degree where the enemy cannot match the level of combat which can be imposed on him by friendly forces.

Slowing down the movement of vehicular traffic carrying troops and materiel accomplished through such mundane occurrences as a landslide on a mountain road or railroad, caused by aerial bombardment of susceptible slide areas, can mean much to the forces attempting to use that road or railroad. This is particularly true in underdeveloped countries where there is a lack of heavy earth-moving equipment and sometimes even a shortage of the material and know-how needed to break up large rocks with explosives. There are often relatively large supplies of "coolie" labor within walking distance which can be applied to such obstructions and can be quite effective in removing loose rubble and dirt. But for large rocks and slides which cause deep obstructions, and even if large trees are involved in the slide, it can take anywhere from quite a bit of time to a very long time to remove the slide. It will always eventually be removed, but in the meantime there is initially a backup of vehicles and then a general increase in turn-around time until the road gets back to normal. In the first case, if the vehicles "bunch up" behind the obstruction the vehicles themselves may become a target, and in the second case as the turn-around time goes up the number of trucks or railroad cars arriving at receiving and delivery points goes down, just as though a significant number of vehicles had been destroyed. (E.g., if the turn-around time is doubled, the immediate effect is as if half the fleet of

vehicles needed had been destroyed.) Of course, a series of landslides exaggerates the overall effect, and if they are done sequentially, that is, as soon as one gets cleared up another one occurs, perhaps at some other slide area along the road or railroad, then the effect is to virtually block the road over an extended period of time.

It should be noted that this calls for restrikes, but restrikes of a few sorties against the relatively easy-to-hit, undefended targets may be preferable to, for example, attempting to use free-fall weapons (or even PGMs) to drop the span of a bridge which is heavily defended by anti-aircraft weapons, is very "hard," and which may, in some cases (e.g., low water), itself be able to be replaced by temporary trestle work in approximately the same amount of time that multiple landslides keep the road closed. In fact, even trans-shipping around some bridges might be easier than getting around some landslides, depending upon where they are located.

Bridges inadequately or not defended by anti-aircraft artillery, and isolated from populated areas, which are "soft" structures of very light construction (perhaps even of timber), highly vulnerable to near misses by relatively large bombs, sometimes just might be appropriate targets for free-fall weapons. Extensive stretches of supported roads or railroad beds in mountainous areas may also provide targets for free-fall bombs. In many cases even mortarless masonry "retaining walls," supporting the road in areas of steep drop-offs, may extend for considerable lengths along the sides of mountains. Unlike most bridges, some of these retaining walls may not always require a small CEP. These large walls may be able to be hit relatively easily, and once one is hit with

a large weapon, great pieces of it are likely to collapse, and the road bed with them.

It should be noted that even against these types of targets, if PGMs with large enough explosive power are available they would probably do a better job in many cases since there often is a preferable spot where a slide, retaining wall, etc., should be hit.

The type of aircraft traditionally used for these "deep" interdiction targets vary from "fighter-bombers" to heavy bombers, including our heaviest bombers from our Strategic Air Command in both Korea and Vietnam. The latter category of delivery system also traditionally (especially in World War II) had been the cause of very much collateral damage while using free-fall weapons in populated areas. With the introduction of precision guided munitions, however, this need no longer be true if the larger aircraft can survive in the anti-aircraft environment in the high altitude zones over the LOCs of the enemy army. If these high-flying bombers can maintain visual contact with the target and direct PGMs, they might be extremely successful per weight of bomb delivered, and produce very little if any collateral damage. This means that a single sortie by a heavy bomber could be devastating to a whole range of targets along the enemy LOCs. Heavy bomber "area" attacks using free-fall weapons might be in order in completely isolated areas for certain interdiction targets, e.g., fuel and ammunition dumps, vehicles parks, base areas, troop concentrations, etc., if aiming points (e.g., for those individual ammunition bunkers or vehicles) cannot be identified, particularly those that are naturally or artificially camouflaged and spoofing techniques are used, but which have been rather accurately located and cannot be left unmolested.

F. Free-Fall Land Mines

Certain kinds of time-limited self-destructing aerial mines may be deliverable in a free-fall mode not only in the battle area but along logistic routes remote from populated areas where there is unlikely to be any civilian traffic. Ways should be developed to warn the odd-civilian vehicles that may come into these zones of the presence of mines. (Incidentally, current air scatterable mines which lay atop the ground may be relatively ineffective if discovered, and vulnerable to high-velocity small arms and secondary tank ordnance, or even the master gun of armored vehicles.)

V. SCENARIOS

A. Introduction

The following scenarios are an attempt to bring to bear a means of definition of some requirements which may be placed upon U.S. and friendly forces in their air delivery of non-nuclear weapons, that might have been underemphasized in the normal process of developing the demands for, and the parameters governing, such delivery. As indicated earlier, the threat of an all-out Warsaw Pact attack on Western Europe, or a North Korean attack on South Korea, and other such obvious threats against areas where American troops are now stationed are not emphasized, except to some degree in one case, and in a way which is somewhat different from the conventional scenarios found in the open literature. Other scenarios cover spots where developing situations seem to indicate the U.S. might be asked to support friendly forces against outside attack, or foreign supported and dominated internal subversion, and where fixed-wing air-delivered weapons may be used by friendly forces and/or forces of the United States. As indicated earlier, the tendency will be to put more stress on the less emphasized scenarios in the areas with which we are constantly preoccupied, and perhaps on more standard scenarios in areas with which we are less likely to traditionally have been preoccupied. In general, the areas of traditional danger, e.g., the "arc of crisis" around the periphery of the "communist bloc" remain, but new areas of danger and possible confrontation between non-communist forces and communist or communist-dominated aggression also exist today.

Some of the chief differences between these scenarios and those that one normally hears about, particularly in areas of highest priority for

U.S. defense concentration, would stem from the "outbreak scenario" which precedes the actual combat. Such scenarios are particularly important because they determine the position of the forces and the sequence in which the violence breaks out. Furthermore, they determine the flexibility of the forces in the area and the conditions and attitudes of the civilian population within which the forces, as well as their logistic and deployment efforts, must function. The positioning and flexibility of the forces determine the kinds of targets that must be hit by air-delivered weapons, and also the timing and sequence in which they must be hit. The target lists, timetable and chronology of attacks when laid against the background of events, particularly in heavily populated areas, and including a kaleidoscopic shift in population location in the face of mass military movement and clashes, provide the parameters, including new civilian collateral damage avoidance problems, within which air-delivered weapons must function.

The following "battle-indicative" scenarios should be looked on as background against which to construct the detailed battle scenarios and then target lists, sortie and ordnance requirements, etc., which are the end products of the military planner. In some sense these scenarios comprise a "textbook" of "case studies" which, though they highlight the inescapable conclusion that each area and situation must be evaluated on its own merits, also indicate some approaches to such evaluations which have application in more than one situation. When this is done in depth, perhaps a somewhat greater emphasis on some rather pertinent issues is introduced into the battle scenarios, which not only supports the development

of battle plans, training requirements, procurement policies, etc., but allows decision-makers to "walk through" situations which perhaps can give them a feel for what they are likely to be asked to do. The specific questions of the possible future roles of precision-guided and free-fall weapons delivered by fixed-wing aircraft, may be significantly affected by these factors.

All these scenarios are predicated on some type of outbreak situations but though some have sections of outbreak information in them, the limitations of this paper obviously preclude full outbreak definitions for them all. Only one full-blown outbreak scenario, defining an outbreak situation on the Central Front of NATO which profoundly affects all types of force application, including air strikes, is included as Appendix A.

B. Confrontation and Initial "One Branch" Battle Scenario--North Cape District of Norway, Mid-1980s

As Soviet ballistic missile submarine base concentrations increase around Murmansk, they become more and more sensitive to the Norwegian presence. In the North Cape area, particularly in the wintertime, Norwegian vessels are constantly encountered between the Norwegian Coast and the pack ice by the Soviet naval surface vessels, starting or returning from patrol, and occasionally even by ballistic missile platforms as they come and go to their stations. Furthermore, the Soviets don't like those Norwegian airfields that close to Murmansk.

The Norwegian and other NATO air and surface patrol ships do not go beyond the 26th meridian into the Bering Sea as things now stand, but the Soviets would clearly like them to be even further west and south of there. In fact, there are indications that the Soviets would like them to stay west of Jan Mayen Island and south of the Arctic Circle. In effect, the Soviets would like the northern part of the Norwegian Sea to become a Soviet lake. The Norwegians do cut down some of the activity of their small naval force in the area, but that doesn't satisfy the Soviets who claim that the Norwegian fishing vessels along the area are really spying on Soviet naval activity. Soviet newspapers begin a tirade against invasion of Soviet "natural, contiguous seaways" by these "Norwegian spyships." The Norwegians protest that this simply isn't true and that most of their naval vessels have even stopped patrolling east of Bear Island which is approximately on the 19th meridian.

In June 1985, the Soviet ambassador to Helsinki implies that really what the Soviets want is to get Norwegian and other NATO naval forces out of the northern Norwegian Sea area altogether and that if those naval units fall back

below the Arctic Circle and west of Jan Mayen Island and all military aircraft, particularly recon aircraft, leave the airfields of northern Norway, the Soviets will cease their demands that the Norwegian coastal and fishing traffic cease around the North Cape area. The Finnish ambassador to Oslo relays this information to the Norwegians and the Norwegians contact NATO. Norway does not want to be denied its right to have its fleet off its coastal areas and certainly has felt that it was doing enough as it was to give up patrolling so much of an area that was legitimately off its coast between the 20th and 32nd meridian.

The NATO Council feels that, in view of the traditional Soviet reluctance to get involved on the flanks, the Norwegians should stand firm at least until Soviet intentions were clearer, both because the sovereign rights of Norway were being challenged and NATO's Allied Command Atlantic is very reluctant to give up its surveillance of that strategic area around the northern Cape. Oslo lets the Finnish ambassador know that it is very unsympathetic to the Soviet idea, and Helsinki passes the word on to Moscow.

Unbeknownst to the West, Moscow had been greatly encouraged by the whole Western attitude in dealing with the Soviets in the past. As indicated earlier, the Western great desire for peace, and the belief on the part of some that arms control agreements, almost despite their content, may be a substitute for armed forces in defending the nation, and the resulting conciliatory attitude at SALT talks and other points of contact, as well as Western failure to react to Angola, Ethiopia and Afghanistan, and the humiliation of the U.S. (apparently carried out with relative impunity by Iran), etc., had convinced the Soviets that the

United States, and NATO as a whole, viewed themselves as second-rate military forces and seemed not only resigned but probably willing to assume that position. To the Soviets, this meant that the West's spheres of influence naturally should shrink; and in fact, the Soviets felt that although this was not the declaratory policy of the United States and the West, it was the de facto policy and had been recognized as such by the NATO members. Furthermore, although they are keenly aware of the new declaratory policy (first voiced by the Reagan administration), they do not believe there has really been a significant action policy change. Under these circumstances, the Soviets are much less concerned about the Central Front than they were at one time, and unbeknown to the West, and their whole policy about becoming engaged on the flanks had been changing. They had become quite convinced that the northern sea lanes of the Arctic Ocean and the northern Norwegian Sea fall within the natural sphere of influence of the predominant Soviet presence in the form of not only naval and air strength but commercial traffic in that area. All these zones are within range of long-legged MIG models based in the Kola Peninsula and are under constant surveillance by long-range, land-based reconnaissance aircraft. The Soviet Northern Fleet has 130 submarines and 80 major surface combat ships,* and clearly if the transit of naval vessels in these sea lanes is any indication of a dominant naval force in the area, the Soviets win hands down. It would just be

* The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adlard & Son, Ltd., Bartholomew Press, 1980), p. 12. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

very handy if they could feel secure further out into the Arctic Ocean. And, of course, it would be very helpful if those Soviet aircraft could overfly Norwegian territory in the northern area since it would increase their range considerably.

The Soviet reaction to the Norwegian response to the Finnish ambassador's "leak" of Soviet intentions, therefore, is much stronger than the NATO people expected. Soviet newspapers begin a drumfire of abuse of Norway accusing that northernmost NATO country of being a tool of larger aggressive forces and acting as an advance base for aggression against the Soviet motherland. The papers go on to say that the Soviet armed forces have dealt with such aggression before and if Norway were to become a party to such a plan, she would regret her actions. Furthermore, the articles imply that, should Norway persist in her unfriendly attitude toward the Soviet Union in the North Cape area, this in itself would indicate Norwegian intentions to become part of a larger aggression by the "anti-socialist" forces in the West.

At this point some movement of forces within the Leningrad military district becomes known to NATO, and the Soviet high-altitude aircraft overfly large portions of Finnmark in northern Norway. The Soviet overflights are not opposed by the few Norwegian aircraft in the ^{area}, but some additional fighter aircraft from the small Norwegian combat aircraft force of 123 planes* are ferried into the area.

* The Military Balance 1980-1981, p. 30.

Meanwhile, Norway appeals to NATO for support, and the Norwegian ambassador to the United Nations stands up and delivers a speech condemning the Soviet warlike actions in the area and the violation of Norwegian air space by Soviet military aircraft. Nothing comes of the Norwegian speech in the U.N. except a Soviet accusation that Norwegians, not the Soviets, were disturbing the peace in the North Cape area. The appeal to NATO brings somewhat better results. Two large carriers from Allied Command Atlantic begin to steam toward the area.

American reserve transport squadrons out of McGuire Air Force Base land near Seckenheim in Germany and begin to pick up ACE Mobile Force infantry battalions and their supporting recon outfits and artillery batteries. Their supporting helicopter detachments and ground support aircraft squadrons are already on the way.

The Soviets quickly learn of these military moves and decide that despite these actions, the number of forces involved is small and as yet they do not pose a threat to the huge Soviet concentration of military power in the Kola Peninsula. Furthermore, they feel that this is just a test of Soviet determination and that it is safe to "escalate" the situation somewhat further to test the commitment of the NATO powers. The Soviet ambassadors to Bonn, Brussels, London, and so forth, point out to the foreign ministries of these countries that the Soviet position in the North Cape area is already established fact and that any attempt by NATO to reverse this situation would be an affront to the hard-earned Soviet position. They repeat the claim that this is the natural sphere of influence of the Soviets, that the Soviet Union is a great nation with a right of access to the ocean without the harassment of small powers with no interest in the area except the accident of geographic location of a few miles of

virtually uninhabited arctic coastline. The ambassadors also point out that they're well aware of the strategic importance of this section to the large anti-socialist imperialist states, but this has nothing to do with the sovereignty of Norway--it has to do with the dire threat to Russia's legitimate ice-free sea lanes to the ocean. This, they say, is a different matter entirely, and the Soviets have every right to insist that this threat to their lifeline to the ocean be removed; and furthermore, that if it not be removed, the Soviets have the legitimate right to take action to see that it is removed. They point out that they are not insisting that the Soviets occupy this territory, just that military forces which threaten the Soviet lifeline not occupy it, and that Soviet naval and merchant traffic can traverse the area peacefully without being constantly under the surveillance and "harassment" of Norwegian and other NATO spy ships and aircraft. They say that obviously to ascertain that such forces are no longer in the area, they will have to overfly the Finnmark district of northern Norway, in a peaceful mode, and that this too is a legitimate demand of a great nation whose sphere of influence is clearly in that area and who is a dominant force there. They say there is no purely Norwegian reason for not allowing Soviet aircraft to overfly this wasteland. They do, however, again recognize the reason for the capitalist, imperialist forces (who are using Norway as a tool) to deny the Soviets the right of such peaceful transit over Finnmark. The ambassadors conclude by declaring that the Soviet Union is determined to exercise these legitimate rights and that interference with such rights would be viewed as hostile acts against the U.S.S.R. by any power taking part in them.

The NATO countries begin to become worried now because the Soviets seem quite determined, but there is still some feeling that activity on the "flanks" is still probably not considered a serious Soviet policy in the Kremlin. So, though Britain, Germany, Belgium and Holland are, to various degrees, against a confrontation with the Soviets, they're willing to have the U.S. go a step or two further on the assumption that the Soviets are not that committed to any large action in the North Cape area, and the now totally American naval task force therefore clears the Iceland-Faeroes line and enters the Norwegian Sea. The two carriers in the task force each have a main battery of about forty attack bombers with another forty fighters to give them cover. In addition, they each carry about twenty more assorted aircraft from recon to intruder aircraft and early warning and ECM planes. In addition, the task force has some surface-to-surface missile ships as well as anti-aircraft and ASW vessels. There are even a few gun-capable ships in the task force.

Soviet recon aircraft and submarines shadowing the task force report that it crossed the Faeroes-Iceland line at flank speed and seems to be heading directly for the trouble zone. The long-range aircraft report that oilers had been alongside the ships for a significant time prior to reaching the vicinity of the Faeroes, but now the task force had left the oilers and was proceeding at speed in a northeasterly direction. Apparently the task force had topped off its fuel tanks and would be able to stay on station for a considerable period.

The Soviets fly in additional aircraft to the bases near Murmansk, and the anti-aircraft defense, particularly in such places as Severomorsk are beefed up and put on a high alert. Soviet armor moves west of the

Pechenga River and the border patrols on the Norwegian side can clearly see a not insignificant concentration of Russian mechanized troops on the heights above the Jakobs River valley.

A sizable flotilla of Soviet attack submarines puts to sea, and the surface vessels disperse out of Murmansk down the estuary of the Tulema River.

The NATO (American) task force reaches a point approximately on the 15th meridian at about 70° north latitude, and the ASW vessels out ahead of the task force begin to make contact with the Soviet attack submarines. Long-range Soviet recon planes are met by fighters from the carriers as soon as they come within range, but as yet nobody has made an overt move to stop the progress of anybody's ships or planes.

The task force gets to about the 71st parallel at about the 21st meridian and its long-range recon aircraft are already overflying the Bering Sea. These aircraft are met by flights of MIGs out of the Kola Peninsula.

Meanwhile, ACE units are lifted into the Finnmark area around Lakselv, and some advance units are put into Tana. Some composite air strike forces ferried in from the United States and Europe join them, and fighters now rise to challenge Soviet recon aircraft that approach the border of Finnmark.

The Soviets are faced with the problem of having to make a decision as to whether or not to hit the air bases from which the NATO fighters arise and whether to disable the carriers from which more fighters and strike aircraft come. Not only would sinking two carriers be extremely escalatory against the U.S., but even if they should strike the bases and

carriers, it is possible that before they could be successful in thus immobilizing the strike aircraft, both the carriers and the bases in Finnmark might launch against Soviet air bases in the Kola Peninsula and perhaps even Severomorsk. If a carrier were the target, one might expect military targets in Severomorsk to be hit along with some in Murmansk. The air defense of these areas is formidable, but several SSBN craft, in Severomorsk in various stages of overhaul and refitting, would still be at risk if some attack aircraft broke through. The Soviets therefore decide to make a ground force demonstration against the border and limit escalation to the ground where they have great superiority and thus perhaps gain their end without risking extreme escalation and/or valuable targets in the Murmansk region. The logistic situation in the area is anything but ideal for tank and motorized rifle division operations, but the road system is adequate to support one division of each type. If a few more are needed, the Soviets can probably supply them by hedgehopping small coastal steamers along the southern shore of Varangerenfjord, going into the many small fjords to points where they meet the road running across the top of Finnmark. The whole Murmansk area is supplied by the railroad and canal systems connecting it with European Russia. The two divisions heading for the border west of the Pechenga River are supported by another tank and mechanized division on the railroad which could go west from Kandalaksha through Finland in the area of Sodankyla and then north to cross the border of Norway in the vicinity of Karasjck. Finland theoretically is neutral, but it's probable that the Soviets could pressure the Finns into allowing transit of a couple of divisions up along

that roadway without too much difficulty. This would put the Soviets in a position to threaten Lakselv on the road traversing northern Finnmark. This town at the junction of two roads is now occupied by an ACE unit but not nearly the size of a two-division task force that would be coming against it.

Soviet forces now engage in a ground unit "reconnaissance in force" across the Norwegian border and move rapidly up the road toward Tana. They have heavy air cover, and air strikes against them are relatively ineffective because of this large air umbrella. The retreating Norwegian forces, along with some of the ACE troops out of Tana, blow bridges and landslide areas which delay the advance considerably but do not stop it. Some air strikes are effective to the extent that some Soviet tanks are knocked out, and there is a further delaying action by heavy mining of the roads by the Norwegians.

The Soviets inform the European NATO powers that the task force is merely entering Finnmark to disperse the "massive buildup of hostile military forces" brought in there to threaten the vital warm water port area of the Kola Peninsula. They say the Soviets will never stand idly by and watch the imperialist anti-socialist states make that kind of massive military buildup on their borders. They state that once the anti-socialist imperialist forces are withdrawn, the Soviet task force will return to its own land.

NATO is now faced with the choice of draining off forces earmarked for the Central European front to try to match the Soviet forces in the area. If they should so choose, they would be faced not only with a large logistics problem but the reduction of forces on the central front.

The Soviets too would have a spectacular logistics problem if the battle really grew to large proportions in the North Cape area. If NATO could control the air over them and its ASW units were successful in warding off Soviet attack submarines, then it would, after all, have sea lanes available to it for its "projection forces" and the Soviets would have to depend on the one Volkhov-Murmansk railroad and the canal systems to the White Sea (which freeze in the winter). The road systems across northern Norway and Finland are quite bad and only by using large sections of the Finnish highway and even railroad systems could they rapidly transfer and continue to supply moderate forces in the area of Lakselv.

If the United States should decide to send its ready divisions from the ZI to that area and European NATO countries would call up their reserves and send them north, the battle could escalate quite rapidly. Counting the two Norwegian divisions, the allies may be able to concentrate a five or six division "armor light" corps in that area. The Soviets of course could concentrate more than that in the Kola Peninsula, but would have difficulty projecting very large forces deep into Finmark, particularly in the face of resistance and sensible NATO defensive engineering activity. This is an area where the Soviets would have difficulty building up a large force quickly and supplying it in the face of a determined enemy. (Of course, they could use larger forces further south if they wanted to fight their way across Sweden to do it.) If the war were protracted the Soviets could improve their LOCs somewhat and support a large force, and of course if the Soviets were to fare badly and fall back on their dumps they would grow progressively stronger until, when they cross their own border, they could deploy and support a large force.

In addition to the demolition work being done by the Norwegian army as it falls back, and because of the very bad logistic situation across Finland, and the lucrative targets still available behind the Soviet lines in Norway, all of which could probably not be demolished in time, air strikes against the weak Soviet land LOCs and the light transport ships moving supplies for their troops along the coast could be highly productive in reducing the Soviet combat capability at the FEBA. Here again, strikes against individual transport ships and Soviet naval ships could best be carried out with precision guided munitions, as could strikes on Soviet armored columns themselves. Because of the probability of inclement weather in this area, and heavy air defense, however, precise target acquisition may become difficult. Though the general location of a column might be determined, if precise impact points cannot be ascertained by aircraft flying at the speeds and low altitudes the enemy AA systems impose on them, and if it is urgent not to leave the column unmolested, because this is such a desolate region with very few towns or areas of habitation free-fall CBU type weapons might sometimes not only be effective but acceptable from the collateral damage point of view. Furthermore, because of the mountainous terrain, there may be the opportunity for landslides and other such obstructions to roads clinging to the sides of relatively steep hills. Often one can tell which points are more likely to precipitate a slide, and PGMs could hit a slide area more precisely. But if preferred points of susceptible slides in a relatively spacious slide section cannot be determined, free-fall weapons may also be almost as effective in temporarily blocking these LOCs as could PGMs. (In the forested

areas of Finland, further south, timber blow-downs might also provide temporary obstructions.) Repeated strikes along these roads in remote, desolate areas, may in effect, at least temporarily, close them if fixed-wing aircraft could get through. PGMs could drop trees growing closer to the road, but PGMs would do better cratering the road. Assuming always that the areas to be struck are not defended with anti-aircraft weapons (which is not an unlikely situation since we are probably talking about numerous steep hillsides with a tendency for landslides and timber blow-downs) free-fall weapons may apply. Free-fall weapons should be back-up weapons here, or if PGMs are scarce, these more accurate weapons can be kept for strikes either near populated areas or where target acquisition is precise, the knocking out of the target is critical, and the PK is high for PGMs.

The area of northern Finland just south of the tundra is forest, and here again there may be a requirement for striking units whose whereabouts are only relatively accurately located, yet the units cannot remain unmolested under particular circumstances. Tracks in the snow, or on the ground, can oftentimes show where armor and other units have entered forests, and one may even know within an area down to acres where the unit is bivouacked, but individual vehicles may not be able to be picked out and/or identified. The same thing can be said for dispersed ammo and POL dumps under the spruce trees. Under these circumstances, if specific aiming points cannot be ascertained, and there is no danger of collateral damage, and if the local anti-aircraft defense has not forced stand-off delivery of weapons, free-fall weapons may be effective. (Most of this area is virtually unpopulated, so collateral damage should, in many cases, be avoidable.)

In any event, here again is a situation where fixed-wing aircraft ordnance, at least originally, would probably be required to try to compensate for superior enemy armored forces. In fact, if worse came to worst, and certainly if the Soviets fell back and gained strength, and NATO for some reason persisted in the attack across the Soviet border, strikes by aircraft may be projected against the single Soviet rail line inside the Soviet Union, connecting the Kola Peninsula with European Russia. (In any case, at least the rail line connecting Tornio in Finland with the Soviet rail line on the White Sea is likely to be hit just inside Finland.) Strikes at targets along the LOCs inside the U.S.S.R. would tax the range of fully loaded strike aircraft, would be in the quite lethal airspace of the Soviet Z1 area air defense system and, depending on the target, may also have to penetrate potent local anti-aircraft defense systems. Furthermore, striking the Soviet Z1 may be an escalation of the conflict NATO may wish to avoid, just as the Soviets may prefer not to escalate to an attack on our carriers. In fact, we may fear that the former may bring on the latter.

This scenario assumes a limited action here on the flank with either Norway or the U.S.S.R. agreeing to terms before the war became a large one. It is difficult to imagine World War III starting over this issue, though the same thing was said about the incident at Sarajevo in 1914. On the other hand, if the NATO defenses did not look credible against the Soviet threat, more than the North Cape area might be at stake, and there might be no hope of talking the Soviets out of these or other similar demands.

C. The NATO Central Front

The NATO central front area has probably had more battle scenarios written for it and has been "war-gamed" more than any other area of the world. We will, for that reason, not go into the details of a battle scenario. We have, however, outlined in considerable detail an outbreak scenario which could drastically affect the battle scenario. This scenario (attached as Appendix A to this study) is based on events which lead to unrest then violence in East Germany--a not unheard of occurrence behind the Iron Curtain--which eventually leads to clashes between DDR and Soviet forces (a la Hungary in 1956), which develops great potential for escalation from there.^{*} The outbreak scenario assumes that neither the Western powers nor the U.S.S.R. desire a NATO-Warsaw Pact clash, but the crisis takes on a life of its own (as previous crises behind the Iron Curtain have done), and the probability of such a conflict continues to mount.

Certain parts of the battle scenario that would follow an outbreak scenario similar to that in Appendix A might be somewhat realistic from several points of view. First of all, this scenario places great emphasis upon the civilian population in the battle zone, in this case, East Germans filling the roads fleeing west or moving out of the way of military movements and combat, to say nothing of those civilians who actually become involved in military activities or paramilitary

^{*}The outbreak scenario in Appendix A was written before the current--1980-1981--Polish disturbances, hence they are not mentioned in it.

activities in support of what turns into a spreading revolution in East Germany. (The same type of civilian displacement of course can occur if there were no problems in the Warsaw Pact and the Soviets cross into West Germany, then the roads of West Germany would be alive with West Germans heading for the Rhine.) This is a heavily populated area. The danger of collateral damage to civilians from air-delivered weapons is very great.

The battle scenario started from this outbreak scenario also would have to take into account the great confusion about precisely where friendly and enemy units were, and for that matter, in the case of East German forces, for example, which were enemy and which were friendly. Particularly in the winter on the North German plain, a battle scenario following such a "reasonable" outbreak scenario would have to consider the extreme difficulties in target acquisition and identification. In these high latitudes there aren't too many hours of daylight in winter, and the weather is notoriously bad during this season. This combined with the great confusion which is probably going to occur in relation to the border between East and West Germany, under this type of outbreak scenario, no matter which way the battle goes, the target acquisition and identification problems are going to be great.

This outbreak scenario also asserts that a severe crisis starts without any great buildup of Soviet forces or mobilization of NATO forces. In fact, what it indicates is a rapidly-growing crisis over a period of less than two and a half days which quickly escalates into a possibility,

or even a high probability, of an outbreak of quite large-scale conventional war on the north plain of Germany. Rapid as this outbreak scenario develops, it is not nearly so rapid as the movement of events in past high crises in Hungary, Poland, and East Germany, and other crises behind the Iron Curtain. All these revolts happened too rapidly to allow the Soviets to intervene with adequate forces to suppress them within sixty hours.

The overall factors in this type of scenario are based on the general idea that if there were to be an outbreak of war on the central plain of Europe, there would probably be a worsening of the situation there for at least a limited period of time prior to the outbreak, and some type of at least tactical warning of the probability of large-scale violence, whether it comes about in the manner of this outbreak scenario or some other. This type of outbreak scenario merely points out, for example, that though there might be time to disperse aircraft from fields where they were vulnerable, and take other actions to prevent similar vital fixed targets from being hit by dispersing and/or defending them, the close-air support mission might be extremely difficult to carry out because the situation at the "front" might simply be too confusing, and decision-makers would be influenced by too many other factors, and therefore as far as this mission is concerned, the advanced warning may not be able to be exploited very well.

Targets for fixed-wing aircraft, even in the category of armored vehicles and so forth, may be accessible primarily in the rear areas, depending on the outbreak scenario which governs the battle scenario.

Maybe only second echelon armor or even third echelon armor may make adequate targets for fixed-wing aircraft under the outbreak scenario in Appendix A. Confusion right behind the FEBA and, in this scenario, even in zones deep inside East Germany (where fighting is in progress between East German and Russian forces) could make target acquisition and identification problems very difficult. Maybe only far into East Germany, in zones where there are no East German troops, or even in Western Poland, could we find columns of armor which would almost surely be Russian (assuming the Poles had not as yet deployed their own forces), and in places where the civilian population was not endangered. In fact, very early on, not only the decision whether or not to hit fixed targets associated with air supremacy and air defense suppression may well come up, but a similar one concerning fixed targets associated with battlefield and very deep interdiction targets may also arise. If the decision were to hit such targets, a large amount of ordnance would have to be delivered very quickly, thus greatly expanding the battle in area and intensity (which makes this a highly political decision). Yet in the confusion, inclement weather and early darkness (as outlined in the outbreak scenario), perhaps hitting such well reconnoitered fixed targets would be the only aerial bombardment which would be other than minimally effective, or even counter-productive, if we were to bomb "friendlies" in the battle areas.

Many of these fixed targets, particularly the interdiction targets, however, are in populated areas where collateral damage could be great unless very accurate weapons were used. This just about rules out free-fall weapons for such targets; it may rule them out for PGMs in many cases too, if visual acquisition, and particularly if continuing visual contact, is needed for these weapons to be effective.

The most telling factors about this battlefield, of course, are the dense population on both sides of the FEBA, the relatively enormous weight of ordnance (even in PGMs) which would have to be delivered if a full-scale escalation should occur, and the vast number of sorties which must be generated to deliver this ordnance. From this point of view, among other things, the emphasis on this area in studies and war games is well deserved.

So many of the "Com Z" targets too are in populated areas (some of them perhaps not even hostile) that hitting any fixed target system is also going to be greatly affected by the collateral damage issue. For example, several key bridges on the Vistula water barrier interdiction line are in the heart of Warsaw, some on the Oder interdiction line are in Frankfurt am Oder, etc. If such targets are hit at all they must be hit in clear weather with very accurate and reliable PGMs. The West Germans could be particularly interested in this aspect, for several bridges on the Rhine interdiction line for the NATO LOCs are in Cologne, Bonn, etc. In fact, in many circumstances, both sides may wish to refrain from air strikes against targets near populated areas.

Indeed, in this scenario, one can imagine a situation where both sides might wish to restrict air operations, somewhat as the Chinese and Vietnamese did in their recent (1979) limited border war. In that conflict, air activity apparently was restricted by both sides to the immediate vicinity of the FEBA, and it seems even there strikes against ground targets may not have been overly numerous or heavy.

D. A Communist Syria-Israeli Conflict

According to this scenario, by the mid-1980s, the adherents of communism in Syria include some dynamic people, and the party itself has developed the best organization in that land. Shortly thereafter, a "popular front" government made up of the left-leaning political factions of that country, but dominated by the communists, come into power. Within a year, in Castro-like fashion, the communist leaders eliminate the leaders of the other parties and, as with the SED in East Germany, the coalition quickly becomes simply another communist party organization which dominates Syria. Communist "advisers" pour in from the Soviet Union and other Warsaw Pact countries. Syria gets the lion's share of Russian and Pact aid. Communist discipline is quickly imposed on Syria, supported by an efficient police organization using the tried and true method (and "advisers") of communist police apparatuses around the world. The atheistic tendencies of communism are played down in Syria temporarily in order not to unduly antagonize the Mullahs. Such things as turning Mosques into garages are delayed until there is a stronger hold on the area. Nonetheless, by 1986 Syria is a real, centrally organized communist state, with a centrally controlled military and political apparatus, no effective opposition groups, and first class Russian equipment, along with "advisers," satellite states "Gurkha" troops, and large numbers of trained guerrillas very much in evidence. Furthermore, the Russian fleet has established a base at Latakia, complete with naval air facilities.

To the communist world Syria, now a brother "socialist state" (a drastic change in her status), becomes a very important country in the Middle East. Syria and Egypt are further alienated by this move on the

part of Damascus, but on the other hand, Egyptians still have to be somewhat restrained in their condemnation of Syria, at least for her denunciation of Israel for denying an independent homeland to the Palestinians, etc., lest Egypt totally abandon any position in the Arab-Muslim world. General support in the Muslim world for anti-Israeli statements tends to escalate the rhetoric and eventually the border activities along the Syrian-Israeli frontier.

Iran now has a vehement anti-Israeli position and though her war with Iraq has peetered out, she still has great antagonism for Iraq. Lebanon and Jordan are clearly frightened by the situation and Jordan is again caught in the middle. The Palistinians and those sympathetic to them in Jordan simply will not allow her to make a separate agreement with Israel. Yet Amman fears the consequences if she gets involved in another war, so she tries to fend off the pressures from both Syria and Iraq to enter into an agreement for troop passage through her country toward Israel. Egypt does not like this and lets Jordan know her feelings concerning these Syrian plans, but she does not go out on a limb with promises to protect her from the pressures from Syria and Iraq. In fact, though Muslims in general are not overjoyed with events in Syria, Egypt is under some pressure from members of the Muslims world not to do anything to impede Syria's actions against Israel.

Tel Aviv is becoming increasingly nervous. Though she can handle Syria and whatever aid Iraq can give quite easily, the new influx of Soviet equipment and Warsaw Pact "advisers" and "volunteer" troops is upsetting her. Furthermore, implications by the communists in Damascus that things have now changed and that if Israel "moves against Syria"

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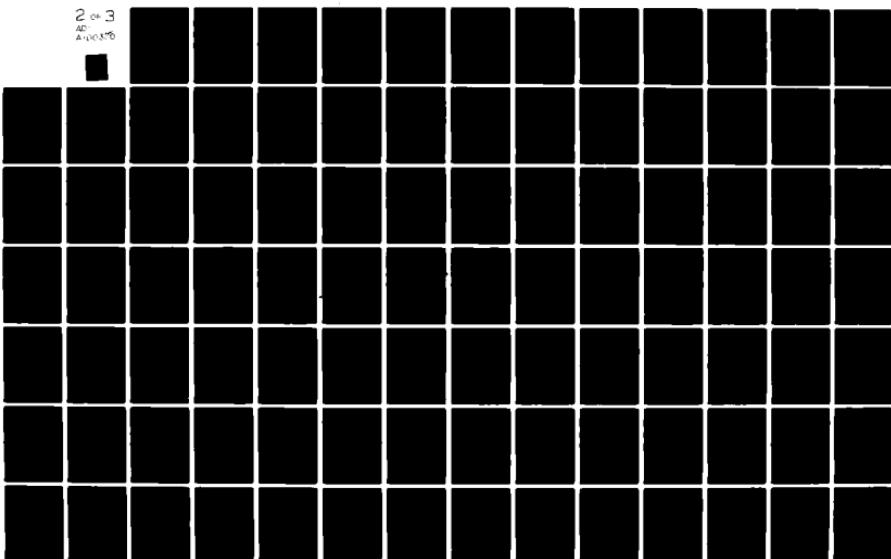
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she will have to answer to the whole Socialist world, have not been repudiated by the Soviet Union. Soviet fleet units now daily patrol the Israeli coast and high-flying Soviet reconnaissance aircraft, out of Latakia, photograph all of Israel from a few miles off shore.

There is no doubt in the minds of the Israelis that they can handle Syria. What worries the Israeli more than anything, however, is the alarming number of "volunteers" who come in with the new equipment. There seems to be at least one Soviet combat division in the Syrian/Iraqi area and apparently the equivalent of a few regiments of East Germans, Czechs, Bulgarians, and North Koreans, as well as large numbers of pilots and maintenance personnel from these Soviet bloc countries to man the new air squadrons of highly sophisticated Soviet aircraft, and hordes of "technicians" to man the SAM systems, etc. Furthermore, it seems that the Syrian fields are being expanded in a way that they could handle many more air squadrons, presumably to be flown in from the Soviet Union, at the outbreak of hostilities. These fields have everything including revetments and complete hardened shelters for the aircraft. Soviet transport planes are overflying Iran to get to the Iraq/Syrian Com Z, and there is some indication that they are quite ready to overfly Turkey if necessary. Meanwhile, the port of Latakia is crowded with a constant stream of equipment and communist troops coming in by sea.

If the Syrians do strike the Israelis, and the Soviets come in, the Israeli may need support in the air unless they successfully hit the Syrian and Iraqi fields before the Soviet squadrons can come in. There will be strong incentive for the Israeli to pre-empt if they feel that to delay would result in the great probability that they would be facing

a Soviet army and air force rather than a Syrian/Iraqi army and air force. In fact, it would be much better if, in addition to striking the air fields with their air force (and some of the Iraqi fields are at extreme range for some Israeli planes even with a light ordnance load, and as optimum a flight envelope as they dare use), the Israeli could drive deeply and quickly into Syria, and overrun as many air bases and anti-aircraft installations as they could. It is much easier to handle SAM sites with tanks than it is with aircraft, better to capture air bases, and also much easier to put airfields out of operation with engineer troops than air strikes. The best tactics of the Israelis may be to take Damascus and then drive on Homs and even Latakia as quickly as possible, thus isolating the Syrians from the Soviet ports and some of the airfields of reinforcement.

Should the Israelis hesitate, however, they might find themselves facing even more formidable air and surface-to-surface missile opposition which may cause them to require assistance of the aircraft of the U.S. 6th Fleet. Also, if the Soviets should be very serious about this, and force an "understanding" on a not too reluctant Muslim Republic of Iran to use the rail line as far as Tabriz, and then bring into Iraq sizeable numbers of Soviet troops by way of Tabriz and the border-crossing areas south of there (as they brought large numbers of troops into Afghanistan), eventually the Israelis might find themselves facing a sizeable Soviet army (of "volunteers"?) despite the difficulties of the lines of communication from Tabriz.

Currently, as indicated earlier, the Israelis should be able to handle the Syrians and Iraqis without too much trouble, particularly if

Iraq had forces tied down facing Iran. Israel has about as many main battle tanks and almost three-quarters as many combat aircraft as both countries combined.* Unless the Israelis have somehow lost their superior combat skills this would actually be a very one-sided war. On the other hand, if there were a vast build-up of Warsaw Pact equipment and personnel, this situation could change considerably. In any event, in one way or another, this may eventually develop into a confrontation that could result in a large land battle in which, depending on the U.S. attitude, American aircraft could become involved. Composite air strike forces of the U.S. air force might also be ferried into Israel to join in the fray, as well as the aircraft of the 6th Fleet. Whether or not we become involved, however, the Israelis are likely to require a large amount of air-delivered ordnance themselves if such a sizeable land battle should evolve in Syria. Anti-armor ordnance delivered by fixed-wing aircraft, particularly in desert areas, should be guided bombs and missiles and accurate gun fire. CBU free-fall weapons might be the next best choice in the wastelands of Eastern Syria and Western Iraq. It is much less likely that there will be target acquisition problems in desert areas. Nonetheless, if occasionally clouds, rain, haze or dust storms, or large amounts of man-made smoke and spoofing techniques were to be encountered (or even at night), precision-guided munitions may lose much of their great advantage. If the targets had to be hit under these conditions,

* The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adlard & Son, Ltd., Bartholomew Press, 1980), pp. 42, 43, 48. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

and their location were known within limited areas, and if the tanks and other targets are away from inhabited areas, then it may be best to use free-fall cluster weapons and save the PGMs for times when they could be beneficially applied. All in all, in this type of country, since target acquisition and identification is normally easier whether strikes are being made against air strips, reveted aircraft, or armored vehicles, point targets are more likely to be hit with precision-guided weapons.

E. A South Yemen-Oman Conflict

An area that might see trouble in the future is the area of the southern Arabian Peninsula and the culprit is likely to be the Peoples' Democratic Republic of Yemen (South Yemen). A decade and a half ago, this small country, now with 2,100,000 people (but covering 112,000 square miles of land), attacked her larger northern neighbor, the Yemen Arab Republic (North Yemen). North Yemen, however (currently with 5,300,000 people and an army of 30,000, with 864 medium tanks), was apparently able to frustrate the invasion by its smaller Marxist-oriented Soviet-backed neighbor, which currently has 375 medium tanks and 111 combat aircraft. (North Yemen has 49 combat aircraft.) It is possible that the Peoples' Democratic Republic of Yemen will clash again with North Yemen, but perhaps her neighbor to the East may be in more danger of invasion. Oman has a population of less than a million people and only 11,500 men in the army, though the troops are said to be well trained.*

Oman is of particular interest to the West at the moment because the peninsula which stretches into the Straits of Hormuz on the Arabian side is part of Oman. Sultan Quabus bin Said is a friend of the West and as a matter of fact, Western volunteers, including British officers seconded to the armed forces of Oman, are among the expatriots who operate their more complex weapons systems, e.g., their jet aircraft. (The

* The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adlar & Son, Ltd., Bartholomew Press, 1980), pp. 46, 49, 50. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

army also has Baluchi tribesmen and Egyptian commandos in its ranks and Jordanians and Pakistani also help man Oman's jet planes.) The Sultan tries to stay friendly with, but not be dominated by the West, and at the moment, despite his well-trained forces, is underarmed compared to the Peoples' Democratic Republic of Yemen in number of troops, and woefully so in the area of tanks and planes. As stated earlier, South Yemen has 375 medium tanks and about 111 combat aircraft. Oman has no medium tanks and 38 combat aircraft, 12 of which are COIN planes. Forty of the interceptors of the South Yemenese are supersonic MiG-21s. They also have 10 MiG 21s, 37 MiG 17s, and 12 SU-20/21s in ground attack squadrons and 12 IL-28 light bombers. Some of these aircraft are believed to be in storage and some are believed to be flown by Soviet and Cuban crews.*

The Sultan has shown interest in the Americans establishing a base in Oman; in fact, he has shown interest in perhaps more than one base. One would be large enough to house a full American division, and there has been some indication of interest in having the U.S. actually have some installation on the peninsula jutting out into the Straits of Hormuz. The Sultan apparently would not want these bases manned, however, unless he felt threatened.

Under most scenarios where Oman comes under attack from South Yemen, the drive will likely come along the coast or the logistic problems for a

* The Military Balance 1980-1981, pp. 46, 50.

large force will become insurmountable. Back from the five to ten mile wide coastal plain are desolate highlands, backed by mountains up to 8,000 feet in elevation in the east and gradually diminishing in height until one gets to the area of Sawqirah Bay in Oman, where the hinterland becomes more level, but still quite desolate. (The eastern region of South Yemen can go as long as five years with no rain at all.) Sawqirah Bay is three hundred miles from the border between South Yemen and Oman, however, and when one gets there there is very little in the way of life-supporting essentials. On the coast are the towns--some of them quite large, but the area is arid. Inside Oman, however, the southwest coastal area of Dhofar province benefits from the June and September monsoons, receiving 25 to 30 inches of rain, making this section of the coast verdant.

Salalah, in Dhofar, is the first large town encountered inside Oman, and it is only 60 air miles from the border. Past Dhofar, however, the coastal area is desert again and there is not another large city beyond Salalah until the Gulf of Oman, where one encounters Sur, and above that Musqat. These cities are about 450 or 500 miles as the crow flies from Salalah.

A drive from South Yemen into Oman therefore will move along the coast from town to town, perhaps depending on the sea as much as anything else to supply any large number of armed forces. This would be an area where the United States aircraft, particularly those from carriers, if we had not already established bases in Oman, could make the critical difference. It is doubtful that the South Yemeni could maintain a drive all the way up the bottom of the Arabian peninsula to an area such as Musqat, but it is possible they could drive across the border and take

Salalah, and defend it against its being retaken by Oman, and then after they have absorbed that section of Oman into the Peoples' Democratic Republic of Yemen, kick off again.

In this way, in a piecemeal fashion with Soviet assistance including "Soviet Gurkhas" such as the Cubans or North Koreans, or soon, perhaps Ethiopians, the South Yemeni might eventually conquer all of at least coastal Oman. In fact, the invasion from South Yemen may come under the cover of an internal "war of national liberation" in the Dhofar region next to the South Yemeni border. Nor would this be the first time that such a leftist war had started in the area; in fact, within the last decade there ended a ten-year Marxist guerrilla war in the southern portion of Dhofar, where the Omani forces finally stamped it out.

On whatever pretext a thrust from South Yemeni would come and for whatever limited or extended goal it had begun, the vulnerable logistic routes along the seacoast, as well as the armored forces themselves, would provide targets in between the towns along the coastal plain where air attack could be crucial in blunting a drive by the Yemeni.

The open spaces between the seaport towns and villages may be areas which, from the point of view of collateral damage, may, in the absence of PGM capability, lend themselves to the use of free-fall cluster weapons on targets which cannot be left unmolested. Except for the monsoons in June and September, when in southwestern Oman wind, clouds and some rain can be experienced, weather conditions along the section of the southern rim of the Arabian Peninsula which would be involved are clear and target acquisition and lock-on guidance conditions,

at least at daylight, should be good. This makes the use of stand-off weapons feasible and attractive, particularly when the targets are anywhere near inhabited areas or there are any air defense systems operative (especially with those Soviet bloc "technicians" manning them). They may be more cost-effective on a sortie per sortie basis even if there are weak anti-aircraft defenses. Tanks, after all, are small, mobile, and quite hard targets. Back-up weapons could be free-fall cluster weapons, which, in the absence of PGM capability, would be acceptable in many stretches of road along the desolate coast to take out targets which cannot be left unattacked. So would gunfire from ships in many cases. Furthermore, trucks and coastal supply vessels are softer targets vulnerable to standard and cluster weapon PGMs, or even free-fall cluster weapons, if PGMs are in short supply and AA defense is not heavy. POL and ammo dumps are targets of the same nature if they can be located, and the probability should be high here. If individual aiming points cannot be acquired, which is less likely here, "area" target treatment, mentioned earlier, may be needed for these targets.

F. The Persian Gulf

So much is being said about military activity in the Persian Gulf region these days that one is reluctant to discuss the issue primarily because one feels that the area has become similar to those where American and communist forces stand eyeball to eyeball (e.g., the central front of NATO and Korea); that is, it is probably being studied to death from the point of view of military activity. Indeed, we have a task force of the U.S. Navy, possibly the most powerful task force currently assembled, operating in the Arabian Sea and Indian Ocean. Nothing more than a passing word should, therefore, we believe, be dedicated to Iran in this small study. It might suffice to say that the geographic conditions discussed in the scenarios involving Yemen and Oman, and Israel versus Syria and Iraq, and to some extent parts of the area of the scenario covering the Horn of Africa, are similar to those of Iran and Saudi Arabia. These are basically dry areas with a lot of clear weather, and large areas with sparse population, although all also have areas of dense population. Many areas in the Persian Gulf region also have from relatively bad to very bad transportation networks.

Iran has one unique difference from these other areas. That is a contiguous border with the Soviet Union. The main communication lines across the border is the rail line from Dzhulfa in the Soviet Union through Tabriz, and Mianeh to the east-southeast, to Teheran. From here other lines go to Qom, Ahvaz and Abadan, and from Teheran to Mashhad near the junction of the borders of Afghanistan, the Soviet Union and Iran to the east. A branch line goes off that line to Shah on the east side of the Caspian; another branch line goes from Qom to Khalidabad and further to the southeast. This

standard-gauge rail "net" basically traverses the most heavily populated sections of Iran. The Soviets could get on that railroad directly by way of Tabriz, or they could cross the border south of Ashkabad, and then go down and join the line from Mashhad in far-eastern Iran. They could even cross the border and come down to Iran by way of the line running to Shah on the eastern Caspian on the Soviet border. To use these lines, however, they would either have to capture Iranian motive power and rolling stock more or less intact, or perhaps convert some smaller units of their own, for Soviet railroads are a broader gauge. There are also several fairly decent highways crossing the border, and there is always the capability of a Soviet sea-lift down to the shore of the Caspian, where again, there are three fairly decent roads crossing the Elburz Mountains, one of them paralleling the railroad to Shah through the same pass. In other words, despite rugged mountainous terrain which lends itself to defense and obstruction by demolition and mining, with only Iranian (particularly current Iranian) opposition, the Soviets could get a sizeable armed force into northern Iran and supply it. (Furthermore, the Soviets have a treaty with Iran, signed in 1921, which states, in effect, that in case there is danger in Iran of foreign intervention, the Soviets have the right to cross into Iran to influence conditions there through military activities.) In southern Iran, however, particularly southeast of Shiraz and generally in eastern Iran, the communication net is quite bad.

Of course, as the media in the recent past has pointed out, the area of southern Iran from a line through the section north of Ahvaz to the area north of Shiraz and beyond, and down to the shores of the Persian Gulf

including the oil fields), is inhabited primarily by Sunni Moslem Arabs, though the number of Shiite Moslem Persians and others in the area has increased dramatically since the recent great demand for workers in the oil fields. In the northwest, the region of Tabriz and south to the area of Mahabad and over to the Turkish and Iraqi borders, the population is primarily Kurdish. North of there to the Soviet border, the population is primarily Azerbaijani. In addition, there are Kashkirs and other non-Persians in significant numbers in other sections of Iran. Generally speaking, the attitudes of these peoples run the gamut from indifference, as far as the wishes of Teheran and the Persian Shiite Muslim majority are concerned, to violent separatist sentiments.

What these groups have in common is the Muslim religion, though in a variety of sects (just as there are in Christianity), who often do not see eye to eye on many issues, as well as geographic jurisdiction. Again, even for one with an amoral, purely pragmatic point of view, warfare in this area should be waged so as not to solidify these diverse groups behind the opponent, be he a hostile Iranian government or some foreign power.

One of the types of ordnance delivery which must be most sensitive to these restraints is aerial bombardment. Even many French (particularly in Normandy) were less than completely understanding when allied bombers flattened cities like St. Lo, despite the fact that the aim of the whole allied operation was to liberate France from Nazi Germany, and St. Lo had German troops in it. It may be doubly difficult for less sophisticated peoples to appreciate the loss of their homes and loved ones to aerial

bombardment by U.S. and/or allied planes. While other issues may be somewhat unclear to them, particularly since the only information they have will be from their government (albeit a government they don't trust), those who kill their families are very likely to be identified as their enemy, or at least not their friend.

Of course, Saudi Arabia is primarily wasteland with a very sparse road net, and a rail line only as far as Riyadh. Saudi Arabia is thinly populated, but it is so huge that of the countries in the region it is surpassed only by Iraq and Iran in population, and it too has areas of dense population. Nonetheless, with over eight million people it is still a relatively small country, but anything but a poor one. It has an army of 31,000 men and it has 380 medium battle tanks, including 100 M-60s, and has another 150 M-60s and 370 AMX-30 medium tanks on order. It also has an air force of 136 combat aircraft, 105 of which are F-5 Es, Fs and Bs. *

At present, and since the area has not been known recently as one with first-rate combat forces, Iraq might have the most effective (but not by much) military force in the area with its army of 200,000. It has 2,500 T-54, 55, and 62, and 100 T-34 and 100 AMX-30 medium tanks, and an air force of 332 combat aircraft. Iran has an army of 150,000 men; it does have 1,733 medium battle tanks, and 445 combat aircraft, including 77 F-14 As. ** But at the moment, without any foreign assistance,

* The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adlar & Son, Ltd., Bartholomew Press, 1980, p. 47. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

** The Military Balance 1980-1981, p. 42.

the Iranian army is probably quite ineffective; it is difficult to tell how much of the equipment is operable, or for that matter, how many army personnel are reliable or even "locatable." It is apparently adequate to "hold" the Iraqi army in its present position but not drive it out of Iran. Since the Iraqi army has always been far from a first-class fighting organization, one can get some feel for the level of competence of the Iranian army. Iran also has the largest navy in the Gulf with 3 destroyers, 4 frigates, 4 Corvettes, and a whole series of smaller vessels.* It is also hard to tell how this service is faring.

Land battles in this area could vary drastically in size and intensity. Without Western or Soviet assistance, the confrontation is less likely to escalate, and this situation probably will persist for the foreseeable future. Iraq does receive support from the Soviet Union, and at the moment Afghanistan seems to be in the process of being incorporated into the Soviet bloc so Iran has enemies and potential enemies on three sides of her, with of course the greatest threat coming from the north.

The Iraqi attack on Iran did not prompt the United States to take any action, nor is it likely that it will, perhaps not even if it became clear that Iran was going to totally collapse. If the Soviet Union were to become involved in the attack, or if she herself should launch an initial attack, the situation might be quite different. Even after the Iranian "students" seized our embassy and personnel, President Carter

* The Military Balance 1980-1981, p. 42.

hinted that if Iran behaved herself and returned the hostages, we might be interested in helping her defend herself against the Soviet Union. Furthermore, the American President made it quite clear that if the Soviets should move any further south from Afghanistan toward the Arabian Sea or toward the Gulf of Oman through Iran, that we would feel that we would have to take some kind of action. President Reagan's attitude, if anything, would seem to reinforce this position even more strongly.

If Iraq and/or Iran should move against Saudi Arabia, the U.S. and/or NATO powers (and perhaps some contiguous powers--Egypt? Israel?) may wish to help. If the Soviets were involved this assistance may be more or less likely to develop, depending on how credible the U.S. commitment is, how much they fear the Soviets, etc. We should at least get basing rights.

In any event, the larger nations in this area are heavily armed and have large military forces, while the smaller ones are not so well armed, but entrance of Soviet forces would change the balance drastically. All these countries have areas of dense population where collateral damage can rule out the use of free-fall weapons. These lands also have vast wastelands where battles might take place (as in the Sinai) with virtually no civilians at risk, but prime battlefield targets would be mostly of a point variety best suited to PGMs and the weather should generally not greatly hinder target acquisition, though free-fall CBU weapons might be the next best choice in the area devoid of people, when PGMs cannot be delivered and targets cannot be left unattacked. There may be some lightly or undefended area targets in desolate areas where in the absence of heavy PGMs, free-fall weapons may be applicable, e.g., here again there

may be undefended landslide areas in uninhabited mountain areas along the LOCs where precision aiming points in the slide area cannot be determined, etc. In recent history, clashes in this area of the world have not been large-scale conflicts. Under some scenarios, however, there may be a potential here for warfare of large proportions, sometime during the next decade, which rests not only in the indigenous forces and equipment in the area, but at least in the northern sections, also on those that the Soviets could introduce. It is another area where fixed-wing aircraft may have to try, at least temporarily, to off-set a great enemy superiority in armor, artillery, etc., as well as aircraft. Large amounts of air-delivered ordnance could be necessary here, preferably PGMs.

C. The Horn of Africa and the Problem with Ethiopia

If the Soviets can solidify their relationship with Ethiopia to the extent that the Marxist Ethiopian government feels indebted enough to the Soviet Union, or dedicated enough to a foreign policy which tends to coincide with Soviet interests, there could be considerable difficulty for the peoples of Africa. There are, however, problems within Ethiopia itself. The country is divided among Muslims, Christians, and "pagans." The differing religious groups can be located geographically to some extent. The Coptic Christians are located primarily on the high "plateau" in the northwest section of the country but not right up to the border of the Sudan or to the shore of the Red Sea. Except for sections near the extreme southern end of the border with Sudan, and the northern portion of the border with Kenya, which are inhabited by pagans and mixed groups, the rest, a major geographic area of the country, is inhabited primarily by Muslims.* They also make up the largest religious group: about 50 percent of Ethiopians are Muslims.

Furthermore, people from the province of Shoa, primarily Coptic Christians, have held the lion's share of the higher administrative positions in the government and the military under the imperial system. This has in the past, and to this day, caused ill feeling with the other groups, both Coptic Christian and Muslim in the country. Separatist Eritrea further complicates matters. In addition, the people in

* Tom J. Farer, War Clouds on the Horn of Africa: The Widening Storm (New York: Carnegie Endowment for International Peace, 1979), p. 10. This and all subsequent information from this work used with the permission of the Carnegie Endowment for International Peace.

southeastern Ethiopia are largely of the same ethnic stock as the Somalis. The new government, however, is pledged to open opportunities for more people in the government and in the army, but more importantly it has the power to use--and does use--the iron fist if opposition arises.

On the record, Marxist totalitarian states have shown an ability to "unite" and "keep calm" areas that have through the millennia been turbulent. For example, the Balkans have seldom had a period of calmness to compare with that of the last thirty years. Similarly, the vast areas of China, many of which have been traditionally separatists and to a large extent lawless, have been brought together and held in control by the new Communist government. Even Tibet is now under that government, and Chinese forces not only occupy Tibet, but Tibetan women are pressured to intermarry with Chinese soldiers. The same thing occurs in the western Chinese areas bordering with the Soviet Union where people other than ethnic Chinese inhabit sections near the border. (On the Russian side the Soviets move in Great Russians settlers.) Cuba, the land of endemic revolution, has not had one for twenty years since the Communists took over.

In brief, the fact that Ethiopia has been traditionally divided and held together only by the rather strong hand of the Emperor and his army does not mean that now that he is gone it will fly apart through centrifugal force.* Quite the contrary: to repeat, Marxist totalitarian states, on the record, have a history of success in handling such problems. If it should indeed evolve into a tight totalitarian state, Ethiopia could

* War Clouds on the Horn of Africa, pp. 13, 15, 21.

emerge as a very large threat not only to the Horn of Africa but to Sub-Saharan Africa down to Rhodesia, and it could dominate the southern reaches of the Red Sea.

Ethiopia not only has the largest standing army in Sub-Saharan Africa, but it is equipped with many more medium tanks than any army in the area and, with the exception of South Africa, its air force has far more high-performance combat aircraft. Furthermore, the Ethiopian army, when properly armed, has one of the best records of combat capability in the region. This army, at the moment, is supported by some 16,500 Cuban troops, and 300 Warsaw Pact "advisors," who operate aircraft, tanks and artillery, as well as provide some line outfits. (Some South Yemeni troops may also serve with the Ethiopian armed forces.* Even without these Warsaw Pact and Cuban supporters, however, once the Ethiopians get checked out on their new weapons, it is unlikely that anybody in the area of the Horn of Africa could handle that big army and air force. This includes the Somali Republic, and of course Eritrea has no ability to oppose them in a conventional mode.

If indeed Ethiopia were to set up, under duress, a confederation of the Horn of Africa which included the Somali Republic as well as Eritrea, not only the shipping routes through the Red Sea but the tanker routes via the Cape would lie within easier reach of what could turn out to be a dynamic Communist revolutionary source area for Africa, and perhaps the western Indian Ocean. If the other African countries, or

* The Military Balance 1980-1981, the International Institute for Strategic Studies (Great Britain: Adlar & Son, Ltd., Bartholomew Press, 1980), pp. 51-60. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

perhaps even a country on the Arabian Peninsula like the Yemen-Arab Republic were to be threatened by Ethiopian forces, or other forces backed by Ethiopians, the United States might be asked for support.

In such a case, the targets for air-launched ordnance could, for many reasons, vary greatly from area to area and from cultural section to cultural section. For example, in East Africa, the tip of the Horn itself in eastern Somalia is somewhat different from the northern region of Kenya (which has secessionist tendencies and might become an ally/victim of an Addis Ababa-dominated Horn of Africa confederation), and both vary drastically from regions on the plateau of Ethiopia. The south side of the tip of the Horn has under two people per square mile, under ten inches of rain per year; it is generally low country, seldom exceeding 1,000 ft. above sea level, and is an area of low grass savannah. The northern side of the Horn, including Berbera, has a somewhat heavier population (2 to 25 people per square mile), is hillier near the coast but has the same precipitation as the south side. The western Somalia/eastern Kenya region, including Mogadiscio, also has a population of 2-25 people per square mile, and 20 to 40 inches of rain per year near the border and 10 to 20 inches near Mogadiscio, and is even more low-land in nature. The Ethiopian "plateau," on the other hand, has 60 to 125 people per square mile, gets 40 to 60 inches of rainfall, large parts of it tower to 10,000 feet, and a few mountains even to 14,000 feet above sea level. It is covered with tall grass and thorn forests, and other broad leaf deciduous trees and shrubs. The lower land toward the coast are similar to the Somali territory they adjoin, as is the coastal area of Eritrea. In addition, there are some sizeable cities on the Ethiopian

plateau and along the coast and a road system and even a rail line between Addis Ababa and Djibouti. But there are also large numbers of nomadic Somalis on both sides of the border with Ethiopia whose exact whereabouts are difficult to predict, and other sedentary but primitive peoples whose location is not always that obvious to people not very familiar with the area.

In fact, even the total population of neighboring Somalis is far from precisely known. Most "expert" international opinion (such as the U.N.) sets it at somewhat more than three million, but the Somalis' estimates range as high as 4.5 million. This high estimate is believed to include Somali who live over the border in Kenya, Ethiopia and the French Territory of Afars and Issas. Because of the large nomadic population, however, all these estimates for Somaliland "should be viewed with considerable circumspection." In other words, this is a region where not only is the location of large sections of the population not known, but their actual total number is not even known.

The region of the Horn of Africa clearly has a large spread of the geographic, demographic, social and meteorological variables which affect targeting and strike operations. Furthermore, it is an area in which troubles are likely to arise, if not in the scenario mentioned above, perhaps under some other circumstances.

There is a possibility, for example, that the United States may become directly involved in the Horn of Africa if, as is rumored, Somalis offers the base at Berbera (built by the Russians) to the United States and we accept. It is true that at present we are quite gun-shy of getting involved in any foreign areas, particularly to

the extent of putting Americans on a base in a host country, but with the exception of Diego Garcia in the mid-Indian Ocean well south of the equator, the U.S. has no bases in the area. The Soviets have Aden available to them in South Yemen, as well as Massawa in Eritrea on the Red Sea, provided the Ethiopians can maintain control of the area.

The Soviets are also said to be developing a base in the Seychelles, just about due west of Diego Garcia, and north-northeast of Madagascar. It is, of course, very tempting for the United States to take the base at Berbera, but we would have to be very well prepared either to evacuate in a hurry or defend the base against potential attack from Ethiopia. (Here we may well be assuming some kind of change in position of the Somali government. During the 1970s, prior to the Ogaden War, the Somali Republic was a declared Marxist state, closely associated with and armed by the Soviet Union, and it still is Marxist in orientation.)

In any event, if the U.S. forces were to assist in the defense of the Somali Republic against an attack by Ethiopian and Cuban forces, and their East German and Soviet "advisors," it is quite likely that the area of Berbera may be the target of the attacking force. At least one would assume that this would be so if the Soviets had anything to do about determining which direction the drive would go. Furthermore, it is quite close to the Ethiopian border with a fairly decent road leading from the Ethiopian town of Diredawa, on the Addis Ababa-Djibouti rail line, through Harar and Jijiga on the Ethiopian side of the border, and then through Hargeisa to Berbera on the Somali side. In fact, it was

along this road, in the opposite direction, that the Somali army (with its 250 medium tanks) supported by its air force with its new Soviet planes, drove into Ethiopia in June and July of 1977 and had its surprising initial success by capturing Jijiga and threatening Harar and Diredawa (Ethiopia's third largest city). At that point, however, the Soviets switched sides and thousands upon thousands of Cubans and somewhere between a billion and a billion-and-a-half dollars worth of Soviet aid poured in* (including 600 medium tanks). The Ethiopian spear-head armored units, manned by Cubans, and sophisticated aircraft also manned by Cubans, drove the Somali army back and largely broke it up before Jijiga, after which Somali troops withdrew across the border.** In this war the loss of control of the air by the Somalis had much to do with slowing their drive initially, and aiding in their eventual defeat.

In any offensive war launched by Ethiopians down the same route toward Berbera, the Somalis would now be faced by a very large, well-equipped, combined arms force. The Ethiopians have about 650 medium battle-tanks and 100 combat aircraft including 20 MiG 21s, and 20 Mig 23s. The Somalis have about 140 medium tanks, and about 33 combat aircraft, with only 7 MiG 21s. Furthermore, Ethiopia, with its 30 million people, can simply field a much larger army than the 3 odd-million people in the Somali Democratic Republic.

* War Clouds on the Horn of Africa, pp. 124-125.

** War Clouds on the Horn of Africa, pp. 126-127.

It doesn't look like a good bet that the Somalis can defend themselves against a determined "Ethiopian" attack on Berbera, and they would definitely need help in maintaining control of the air. Furthermore, Ethiopia has a collection of SA-2, 3, and 7 SAMS which could cause problems for ground-attack aircraft. The Somalis have some SA-2s and 3s,^{*} but overall they would need a lot of help if they were to stop an Ethiopian/Cuban/East German/Russian attack force short of Berbera.

If we were to be in possession of the base at Berbera and had U.S. aircraft there, or if we had carriers off the coast to provide an air umbrella so fighters could be ferried in, via the bases in the Sinai, for example, we might be able to maintain control of the air over the route from Berbera to the Ethiopian border. But it might take more than that to stop a concerted drive on Berbera--it might require some ground forces to support the Somalis. It is possible that such forces might even come from some place like Egypt, and for that matter, the fighter pilots might also come from countries such as Egypt or Israel, with American pilots only flying over the area occupied by Somali troops. (Since Vietnam there may be a feeling that it is not good for countries we are helping when the enemy captures American pilots--we may look as though we have a tendency to trade off the welfare of those allies to get out pilots back.)

In general, PGMs are better for the most lucrative "point" targets along the rail line both east and west of Diredawa, e.g., bridges, cuts

^{*}The Military Balance 1980-1981, pp. 52, 54.

of the line itself, etc. But if aircraft can approach "area" targets such as tank bivouac areas which cannot be left unmolested, and if tree cover, spoofing, camouflage, etc., prevents the acquisition and identification of point targets, and they are in uninhabited areas, free-fall weapons might be cost-effective and permissible from the moral/ethical/political point of view. If PGMs are unavailable and action cannot be delayed, one might also find targets in the mountains between Diredawa and Jijiga which might lend themselves to free-fall weapons attack. (For example, here again, one might be able to cause landslides in the mountains by hitting areas with a tendency to slide which are far from any SAM batteries and populated areas, at a time when there are no mobile anti-aircraft units on the road.) If we wish to risk the loss of American pilots, and if we were willing to place a carrier in the Gulf of Aden, these targets would all be in range of carrier aircraft. In fact, many of these targets are so close that the aircraft could carry a maximum ordnance load and still reach them. Of course, air force fighter-bombers of an ally, as well as the U.S. operating out of Berbera could also reach many targets in this area within their own fuel range, and again carrying a full weapons load.

In the absence of PGMs (including CBU PGMs) and air-borne cannon, free-fall cluster ordnance may be somewhat effective against vehicle convoys on these roads in the remote areas, provided that the convoys were not too well protected by their own tactical air defense systems, or that they were not in the vicinity of other SAM and tube artillery AA batteries which could engage the attacking aircraft. Most convoys are

likely to at least have some type of unsophisticated light anti-aircraft gun protection which may affect the CEP of aircraft delivering free-fall weapons and reduce their PK against a column of vehicles. Of course, attacks in uninhabited areas with standard free-fall bombs would be more effective if the vehicles were unarmored and the bombs were fused so that their bursts were "above ground."

Gator-type mine dispensers, etc., may also be able to be used in the uninhabited areas which may become battlefields such as some sections between Jijiga in Ethiopia and Hargeisa in the Somali Republic on the road to Berbera. Such weapons might contribute to reduce the Ethiopian/Cuban/East German superiority in armor. These weapons should be timed self-destruct types, and leaflets, or some other means to warn the odd-civilian vehicle driver of mine fields would be required here. Furthermore, to the extent that fixed-wing aircraft must supplement, or take the place of artillery and ground- and helicopter-launched anti-tank missiles, a lack of PGMs and A-10 type gunships might bring on a call for free-fall cluster weapons to turn the tide on the battlefield. Assuming that the requirement is critical, that in this desolate area collateral damage would be avoidable, and AA fire is light, as far as these factors are concerned, use of these weapons may be applicable here.

Against the most obvious and less numerous and important military targets, as well as the targets in the larger population centers such as Jijiga, Harar and Diredawa, PGM weapons most likely will be called for. Military targets of this type would be more likely to be protected by concentrations of long- and short-range SAM batteries, as well as tube anti-aircraft artillery. In this environment, stand-off weapons may be more

cost-effective from several points of view of measuring costs. If one counts in the fantastic primary and secondary costs of having pilots killed or captured, PGMs may win hands down. Furthermore, in the population centers, even if the concentration of SAM batteries is light, or non-existent, depending upon the precise location of the targets, collateral damage can again tip the balance in favor of precision-guided munitions. In the Horn of Africa area, even if we ignore the moral and ethical questions of collateral civilian damage, a very strong political question may quickly become evident. Dead citizens of Third World countries, particularly non-white citizens of Third World countries, killed by armed forces of "superpower" white, capitalist countries, can make even stronger anti-U.S. propaganda material and cause stronger protests outside and within the U.S. than dead white citizens in some developed countries. Furthermore, particularly in a country ridden with internal strife between various groups, civilian casualties, especially from the "wrong" groups, can cause loss of interest in the cause the U.S. supports, or even draw the country together and solidify the support for the war (e.g., dead Somalis, and even Tigres in Ethiopia, could be counterproductive to a war effort against at least the current Ethiopian government.)

Of course, there are bound to be important logistic targets in towns such as Diredawa because of the road junctions with the railroad. Any attack coming out of Ethiopia into Berbera would be likely to involve a logistic dump in Diredawa, probably quite close to the railroad, for that matter, close to a railroad yard, and if that yard happens to be in the vicinity of built-up areas, then we may have the equivalent of a sizeable

depot rather close to concentrations of civilians. Since military organizations tend to use already existing buildings, it is also quite likely that there will be a military headquarters, as well as a communications center, in Harar, as there is also likely to be in Jijiga. As mentioned earlier, there probably will be a considerable amount of anti-aircraft defense, which means that any free-fall weapons are likely to have a relatively large CEP. Using free-fall weapons in these circumstances is likely to mean relatively high collateral damage, fewer targets hit, and a relatively high attrition rate in aircraft; this looks like an area for precision-guided munitions.

Attacks out of Ethiopia in other directions into the Somalia Republic would see logistic routes of the Ethiopians not only with a much smaller capability but through much less densely populated areas. For example, not only is the Ogaden largely populated with nomads who are ethnically Somalis, but is an area, as mentioned earlier, primarily of short grass velt and plateau; the difficulty here with collateral damage, as also indicated earlier, is that the exact location of the population in this region is hard to predetermine. By and large, however, next to PGMs, reccy-strike in this region might be somewhat effective with free-fall cluster munitions, if the columns that were under attack were not supported by heavy anti-aircraft defense. and the attacks were not carried out in the vicinity of permanent or nomad population.

An Ethiopian ground attack against Mogadiscio, for example, would most likely come directly through the Ogaden on the road coming south from Jijiga. This attack could be supported by the secondary routes that wind their way down the Shibili Rivervalley, but these latter would have

much less capacity. There is a rather good road coming out of Addis Ababa down through the pass in the highlands to Yirga-Alam, and from there through Negelli in Ethiopia and crossing the border almost at the point where Kenya, Somali and Ethiopian borders converge, to the Somali town of Lugh Ferrandi. From there, roads cross the highlands toward Mogadiscio. This road comes through rather rugged terrain, and bridges along it would make good interdiction targets for PGMs, and though it does pass through towns it also comes through some desolate highlands where, if heavy PGMs are unavailable, again free-fall weapons could be used against such undefended targets as probable landslide areas. Here again, it is unlikely that the enemy could defend all these areas with anti-aircraft weapons, although the best place to hit on a mountain to induce slides is that section which has shown a propensity to slide in the past, so the Ethiopians will learn they are targets.

This highland road south from Addis Ababa traverses some relatively heavily populated sections. As indicated earlier, it is in the highlands that the majority of the 30 million Ethiopians live. The same problem with military dumps, etc., that was mentioned in the logistic support areas for attacks against Berbera would exist here. In order to reduce the probability of collateral civilian damage, free-fall weapons may be ruled out in the vicinity of built-up areas. But like all mountainous regions, these built-up areas are generally separated by desolate highlands that the roads have to traverse. In fact, it is no doubt the barriers between these valleys that, as in all mountainous areas, have helped to perpetuate the cultural, ethnic and language differences in

the Ethiopian highlands. In other words, though the area is relatively densely populated, as for that matter are the Balkans and the area from the Italian Tyrol through the Alps, there are stretches between the densely populated valleys, which are by and large uninhabited. In such areas, both targets of opportunity and fixed targets exist which may not be able to be protected by heavy anti-aircraft defenses, thus, in the absence of appropriate PGMs, possibly making the use of free-fall weapons suitable.

Though, as indicated earlier, most of Ethiopia does not have much forest cover, some wooded mountain areas, particularly in western Ethiopia and the ridgeline extending north and south, east of a line between Addis Ababa and Asmara, present a terrain where the overhead cover is at least occasionally thick, and in some sections the weather conditions make for haze and ground fog, so that target acquisition can sometimes become a problem. Such wooded areas, however, are generally not on the most likely Ethiopian attack routes, e.g., toward northeast Somalia. Only in the apparently less likely event of an invasion of the Sudan would men, equipment, and supplies at least move through them, and they may even contain base areas, depots, etc. As mentioned earlier, however, the lack of "target acquisition" in such areas oftentimes does not necessarily mean that there is no idea at all where the hostile forces, supply dumps, etc., may be located, but that the precise location of them is difficult to ascertain. There are many instances where vehicle tracks that converge on a small area of woodland, etc., along with covert intelligence information, can give a rather accurate location of a hostile force vehicle park, supply and equipment dump, and so forth, but cannot give precise

aiming points within the general area. Clearly this does not mean that the target cannot be attacked, if it is essential to do so at that time. If it not be near a built-up area it becomes an "area target" suitable for free-fall weapons. If there is no anti-aircraft protection in the area it becomes an even better free-fall weapons target. Even if the bombardment does nothing more than cripple some vehicles and disrupt a bivouac area so that the movement of the force is delayed, depending on the tide of battle and the specific conditions of the conflict at the time, this delay could be invaluable to the land warfare success of the troops. Cluster weapons including mines, and perhaps even standard HE dropped on these areas, may be as effective as expensive PGMs which lose their advantage. Without precise point target acquisition, as far as target damage was concerned, they would be playing a role almost identical with that of free-fall weapons against an "area" target.

H. Angola

The ethnic and social structure of Angola and the wide variation in languages have combined to produce a situation which makes central control and national development difficult. Historically, Angolan tribes have been independent, semi-nomadic, and mutually exclusive. Although larger and more powerful tribes have on occasion formed kingdoms in the region (the Kongo in the north, the Ndongo in the central coastal area, etc.), their territories have been fairly small and their influence limited to their immediate neighbors. Portuguese influence in Angola began in the 15th century but was largely confined to the coastal area, with occasional isolated outposts in the interior. Most of the interior was under the control of local African chiefs and remained so until the 19th century. In 1885, the Berlin Conference recognized Portugal's claim to all of Angola, and for the first time Portugal mounted a concerted effort to subdue the inland tribes and promote colonization and development of the interior. The boundaries of the country were purely arbitrary and gave no consideration to the local tribes or their traditional territories. Thus, one of the largest tribes, the Bakongo, was split between Angola and the Belgian Congo, now Zaire, as were other tribes in the east and south.

There are eight major ethnolinguistic groups in Angola: the Bakongo, Kimbundu, Ovimbundu, Nganguela, Nyaneka-Humbe, Herero, Ambo, and Lunda-Quioco, all of whom speak a Bantu dialect, although each differs from the others. In the south are found the non-Bantu Bushmen and along the southern coast, the Cuepe and Cuipsi. All of these latter groups are small minorities who have no economic or cultural significance, and who may shortly disappear.

due to disease, assimilation by other tribal groups, starvation, or migration to other areas.

Traditionally, there has been rivalry and dissension among and between tribes in Angola, in particular between the Bakongo in the north and various southern tribes. In times past, the Portuguese impressed southern tribesmen to work in the coffee plantations in the north because the Bakongo refused to do so. Eventually, the impressment gave way to contract hiring and the system continued until the Portuguese withdrew. What is presently happening is not clear. During the 1961 uprising in the north, the Bakongo slaughtered several hundred Portuguese during raids on farms and coffee plantations. To protect the plantations, the Portuguese armed the southern tribal workers. These workers promptly headed into the rain forest with their weapons and indiscriminately slaughtered the Bakongo. The situation became so bad that the Portuguese were forced to disarm the southerners and provide their own security. The bad feelings among the various tribes continue, from contemporary reports, and account in large part for the difficulty experienced by the government in Luanda in trying to gain control over the countryside. The population of Angola is currently about 6.6 million,^{*} of whom less than 200,000 are white.^{**} It is concentrated mostly in population centers

^{*} The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adlar & Son, Ltd., Bartholomew Press, 1980, p. 52. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

^{**} Based on 1960 census figures. Cuban and other "advisors" are not included in this count.

and in the highlands west of the central plain, with the heaviest average concentrations (30 persons and over per square mile) in the old provinces of Benguela, Huambo, western Bie, northern Huila, eastern Cuanza Sul, southern Cuanza Norte, and southern Malange. It is notable, however, that with the exception of an island between Dunda and Henrique de Carvalho in the northeast, the western and southern parts of the country have less than ten people per square mile.

The geography of Angola is quite diverse. A coastal plain extends along the entire coast and varies from desert to steppe in character. In the north, the coastal plain gives way to tropical rain forests and tropical savannah as one moves east. The center and eastern part of the country is essentially savannah, while the southern part is largely desert. Vegetation is relatively sparse except in the rain forest area. The savannah constitutes about 3/5 of the total area of Angola.

As indicated above, the highland savannah of West Central Angola, known as the Planalto, has historically been the population center of the country. Because of the altitude, there is ample rainfall for agriculture, and tropical diseases, prevalent in the north and along the coastal plains, are at a minimum. The Planalto was the target of Portuguese colonization east of the coastal plain. Rivers in the area are permanent and the river valleys are excellent for farming. The absence of the tsetse fly, found in the tropical north, permits cattle raising.

Population, as mentioned, is sparse in the east and south. The population is almost entirely rural and centers in villages usually consisting of 3 to 75 families. In most areas the villages are circular in plan form and are often enclosed by palisades of branches, thorns

or scrub. Within the palisades are household compounds surrounding a recreation area in the center. In the south, the compounds tend to be smaller one-family affairs built along streams or other sources of water. Similar circular settlements are common along the coastal plain areas. Along the Cuanzo River and in parts of the highlands and coastal plain to the north of the river, rectangular huts and compounds similar to those common to tropical central and west Africa are found.

The transportation system in Angola centers on the three railroads and the road system and is heavily dependent on air transport for the interior areas. The road system generally runs east and west, paralleling the railroads, except along the coast where the various ports and cities are connected by a road network. Following the 1961 insurrection, interior north-south roads were begun in several areas, but the status of such roads is not presently known. In all, there are some 14,000 miles of roads in Angola. Most of them are dirt and many are single-lane. Relatively few are paved in the interior but coastal roads generally are. During the rainy season, from November to April, with some variation in different parts of the country, many roads are impassable due to swollen streams and rivers and mud. Rainfall averages between 30 and 60 inches in most parts of the country. Little or no rain falls during the dry season.

The military situation in Angola appears to be a mixed bag at present, with the government, supported by Cuban troops and Russian and East German advisors in control of the coastal plain, northern coffee-growing region, and the population centers in the Planalto.

The rival liberation forces, however, FALN in the north and UNITA in the east and south have refused to concede defeat. UNITA, in particular, has been active and claims to control much of the countryside outside the population centers and the coastal region. The Benguela Railroad, which connects Angola with Mozambique via Zaire, Zambia, and Zimbabwe, is regularly cut by UNITA, making it largely useless except for local operations. Efforts by Angolan, and Cuban forces to subdue the rebels have apparently failed and their casualties have been reported to be quite high. UNITA, in particular, shows no signs of giving up the fight. It is generally believed that South Africa provides support for UNITA, while Zaire has supported FALN. The eastern and much of the southern part of the country appear to be under UNITA domination, or at least subject to frequent attacks. The FALN is apparently active in the north and northeast, but its effectiveness may not be too great.

The government forces number some 32,500, of whom 30,000 are in the army. Equipment includes some 85 T-34 tanks, 150 T-54 medium and 50 PT-76 light tanks and about 200 BRDM-2 armored cars. Ground-to-air defense weapons include 23mm and 37mm AA guns, and SA-7 shoulder-fired SAMs. Some 19,000 Cuban and 2,500 East German troops operate with the Angolan armed forces. The Air Force, 1,500 strong, has 29 combat aircraft, including 15 M-G 17s, 12 Mig-21s, and 2 G-91 fighters. The navy, with 1,000 personnel, operates 5 ex-Portuguese Argos large patrol craft, 2 ex-Soviet Shershen fast torpedo attack craft, and 7 coastal patrol craft, plus 11 landing craft.* FALN and UNITA forces are unknown as to strength and

* The Military Balance 1980-1981, p. 52.

equipment, but presumably are equipped with light automatic weapons and, possibly, with a few shoulder-fired anti-tank weapons.

With the takeover of Angola by the Cuban/Soviet-supported Marxist MPLA this area became a potential trouble spot, not only internally but in relation to its neighbors. For example, the difficulties which are more or less indigenous to the border area adjacent to the Katanga region of Zaire are quite likely to eventually be exacerbated by a militant Marxist government in Angola. Zambia could find itself under the influence of Angola also. In fact, if the MPLA were to succeed in gaining tight communist-type totalitarian control over the situation in Angola, and to utilize all the foreign assistance in building up a well-equipped and relatively well-trained standing army, potential black communist "Gurkhas" might be available to support Soviet-backed Marxist "wars of national liberation" against militarily-vulnerable governments all over black Africa (one could even come up with perhaps less likely but much more of a nightmare scenario of a communist Zimbabwe and a belt of Marxist powers from Mozambique to Angola). In any event, the United States may find the issue of U.S. assistance, and perhaps even the use of fixed-wing aircraft ordnance in Angola by U.S. and/or friendly forces, coming up in the future.

As indicated elsewhere, under some circumstances Cuba itself might become a combat area, but even if a successful action there should result in a new Cuban government calling its troops home, other Soviet satellite troops might replace them. In any event, Angola is an area where an anti-communist, popular revolution may break out in great force, and therefore it is likely to remain an area where it may be suggested that, in addition

to other actions, fixed-wing aircraft of some power use U.S. ordnance to support it. This task may be difficult for many reasons, not the least of which is the old problem of preventing the bombing from solidifying a very fractionated society behind the MPLA Marxist government. Here again, in addition to the moral and ethical constraints against collateral damage, it is bad sense politically to kill or injure peoples (or even destroy their homes) who may feel at least neutral in the war being waged against the central government, and may even be friendly to forces attempting to unseat it.

If we are willing to stop Soviet and other Warsaw Pact freighters, interdicting Angola itself from reinforcements from Cuba and other countries, as well as Warsaw Pact supplies, is relatively simple at the higher levels of movement where the port areas could be blockaded by American and other friendly naval forces. At the lower levels, however, it might be difficult to interdict materiel trans-shipped from other African states and then brought in and deposited on the beach by small coastal vessels, or materiel that was trans-shipped directly from neighboring states across the border. The likelihood of such trans-shipment, of course, depends on the sympathies and even the ideological persuasions of specific African states.

Inland interdiction would center on the three railroads mentioned earlier, and the most capable sections of the road net which would supply enemy forces. The internal fixed target system would of course include the air fields and air defense fixed targets which may have to be hit to suppress air defense before any extensive air attack against other fixed targets and targets of opportunity is likely to be undertaken.

This may include not only strikes against the military air fields throughout the country but also the neutralization of civilian airport runways if they are being used to house military aircraft. There are such airports at Luanda, Huambo, Benguela, Mocamedes, as well as elsewhere throughout the country.

There are also some naval bases that perhaps might be struck for the vessels in them in order to facilitate blocking operations such as the bases at Luanda, Lobito, Mocamedes.

These targets are very often co-located with population areas so that PGMs would be in order to avoid collateral damage. Many of the targets may require PGMs on the basis of cost-effectiveness alone, however, since dropping spans on critical bridges or even cutting runways on airports, or hitting (or getting damaging very-near-misses on) relatively small naval vessels, perhaps even when they are stationary, requires a weapon with a small CEP. Furthermore, many of these critical targets may be expected to be defended against air attacks, and may require some defense suppression before attacks can be made with relative safety, perhaps even when using stand-off weapons.

Close support missions for military activity would depend heavily upon the kind of battle scenario that develops. If we were supporting a revolutionary movement by the FALN and the UNITA or some other such forces in a quasi-guerrilla warfare operation, the battlefield support targets may still initially be somewhat similar to those of a conventional war target system. The friendly fixed-wing aircraft would want to take out the hostile armor, artillery, etc., which could threaten the friendly light infantry. If the friendly forces became strong enough

to fight conventional battles then the conventional close-support targets would be the standard ones. If the enemy should be forced, or choose to go to quasi or full guerrilla warfare, light infantry would be hard to affect with bombs, unless he were to mass it, when PGMs or even cluster weapons might be effective.

Free-fall weapons may be useful when it is essential to attack his guerrilla forces, and we do not know precise aiming points in the target area--in an unpopulated wooded zone, for example--but have them located within a limited area.

I. Thailand

Unlike many countries in Southeast Asia, Thailand is relatively homogeneous in ethnic makeup. Although minorities exist, they are not the factor they are in many neighboring countries. The largest minority, the Chinese, have become Thai in large part, even to the extent of assuming Thai names. In the northern part of the country, tribesmen flow back and forth over the border with Laos and in the society; in the south Malays constitute a fairly sizeable and often troublesome minority who sometimes engage in guerilla activities in conjunction with ethnic Chinese. In the area of Thailand where a serious guerrilla warfare threat presently exists, i.e., in the Northeast, the population is almost entirely ethnic Thai. (The area between Bangkok and the Kampuchean border, which could be threatened by the Vietnamese army, in general has no heavy minority populations.)

This fact should not be interpreted to indicate that local unrest does not exist in the Northeast. For the past 20 years, while urban Thais and wealthy landowners have enjoyed prosperity, the subsistence farmers who constitute the overwhelming majority of the rural population have stood still or actually lost ground economically. A Thai government study conducted in 1969 found that three-quarters of the families in the Northeast were living in "absolute poverty." Conditions have improved very little in the years since. As a result, local peoples have organized and staged protests ranging from petitions to appropriate government agencies to violence.^{*} Nonetheless, though the reaction of the local people to an invasion by the Vietnamese and puppet Cambodian forces, the present very

^{*}"Thailand's Broken Rice Bowl," Far East Economic Review, December 1, 1978.

real threat, cannot be forecast accurately, it seems probable that the local people would support the government in such an event, since they have no love for the Vietnamese or the Cambodians and would hardly look upon them as liberators. In the event that careless use of weaponry by Thai forces inflicted significant casualties among local peoples, however, their resentment might boil over and cause them to at least decline to become involved in the government war effort.

Thailand is hopelessly outclassed militarily by Vietnam, this despite the fact that its 1978 GNP was \$21.9 billion, as opposed to \$8.5 billion for Vietnam.⁸

Militarily, Vietnam overshadows not only Thailand, but all of Indochina and all land areas adjacent to it, with the exception of the border with China. Vietnam is the most populous nation in the region (60 million people) and has by far the largest standing armed forces in Southeast Asia (1,000,000 man army, 25,000 man air force, and 4,000 man navy). They also have 1.5 million armed militiamen to back up the regular army. More important, however, they have 1,900 of the heaviest tanks in the area (1,500 Soviet T-34/85, T-54, T-55, T-62, T-59, and 400 U.S. M-47 and M-48 mediums), as well as hundreds more light tanks which are generally the match of the light tanks possessed by other countries on the mainland of Southeast Asia. These tank units can be supported by infantry carried in 2,300 armored personnel carriers,

⁸ The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adler & Son, Ltd., Bartholomew Press, 1980), pp. 75-76. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

including 800 U.S. M-133s and V-100 Commandos, as well as in Soviet vehicles of the same type. They also have over 2,000 pieces of medium and heavy artillery of both Soviet and U.S. make. They have 485 first and second line jet fighters and fighter-bomber planes; 60 MiG 19/F6s; 60 MiG 21-bis, 120 MiG21 F/PFs; 90 MiG 17s; 60 SU-7s; and 10 IL-28 medium bombers. They also have 25 F-5A and 60 A-27B (counter-insurgency) U.S. aircraft. In addition, they have hundreds of helicopter gun ships, transport aircraft, etc., of both Soviet and U.S. make.* It is clear that in numbers alone they clearly overwhelm their only large neighbor in Southeast Asia.

Thailand has a population of 47,800,000 people, but a standing army of only 155,500 men, a navy of 32,200 and an air force of 43,100. Their total armored force consists of 34 M-48A5 medium and 244 light tanks and a few dozen armored cars and recon vehicles. They also have about 250 M-113 and 80 other armored personnel carriers. Their fighter-bomber force consists of 14 F5A/Bs, 12 F5Es and 4 F5Fs. Counterinsurgency aircraft include 48 T-28Ds, 31 OV-10Cs, 16 A-37Bs, and 31 AU-23As. They have some recon and transport aircraft and 120 helicopters.**

To make matters worse, the Vietnamese have been fighting for decades and have, for that area of the world (though not necessarily by first line military powers' standards) many skilled pilots, tankers, gunners, and foot soldiers, with much combat experience. Furthermore, to the Thais these superior numbers of troops probably also look tough, ruthless, and like real winners, and if the truth were known, the Thai troops are probably quite frightened of them. (This is not an uncommon

* The Military Balance 1980-1981, p. 76.

** The Military Balance 1980-1981, pp. 75-76.

phenomenon; when the Wehrmacht was at its victorious peak in World War II --and in some cases even sometime afterward--it is likely that most troops in Europe, probably including the Russians, were simply afraid of even somewhat inferior numbers of them, and with good reason.)

I. Direct Threat to Bangkok

Under these circumstances, not only would the injection of Vietnamese troops into Northeast Thailand in support of a pro-Vietnamese communist "war of national liberation" create a grave crisis for the Thais, but they may also face a perhaps less likely but potentially much greater threat. If after the Vietnamese have built up their forces and supply dumps in Cambodia, they should launch an all-out attack on Thailand (perhaps behind a screen of Thai "liberation" forces), it might look much like the Israeli-Egyptian Six Day War of 1967. The Vietnamese aircraft should be able to just about destroy the Thai air force in one sortie, then shoot up the Thai rotary winged aircraft and ground installations at will. With these aircraft shooting up things ahead of it, and the mass of Vietnamese artillery (and they have an overwhelming amount of U.S. and Soviet guns) giving close support, those big Vietnamese tanks, supported by light tanks and their swarms of armor-mounted infantry, should be able to blow away, or sweep aside, Thai troops between the Cambodian border and Bangkok, in record time. It is about 250 to 300 road-miles from Poipet through Prachin Buri and Chachoengsao or Ayutthaya to Bangkok. There are some streams to cross and marshes and canals around Bangkok, but for the most part it is not very bad tank country. Furthermore, the Vietnamese apparently have provided adequate capability to supply their

forces in light fighting far from their home bases during their Kampuchea campaign, so, barring some heavy resistance, Bangkok might fall within two or three weeks. (Of course, if the Vietnamese should opt to hit Northeast Thailand, once they broke through the Phanom Dang mountains they would be in great tank country. Bangkok, however, is the better prize, and its seizure might well see the surrender of Thailand; at least the ability under certain circumstances to seize it puts Vietnam in a powerful bargaining position vis à vis Thailand.)

In any event, Thailand is already in a very precarious position, and without outside help it will become more precarious as Kampuchea becomes more "stabilized." Of course, this does not necessarily mean that Vietnam will want to try to swallow all of Thailand, or even the most densely populated part of it. For one thing, despite the possible eventual value of a satellite with the wealth of Thailand, such a war would, at least at present, put a great strain on an already weakened Vietnamese economy, and if the war should drag on, even at a lower level, the strain could become severe indeed. (All this could lead to more dependence on the U.S.S.R., a situation Hanoi may not wish to promote.) Furthermore, unless things in Kampuchea and Laos had been settled, Vietnam might find herself quite over-extended militarily. Nonetheless, the reality of this frightening ability of Vietnam (along with her demonstrated willingness to use force) could be one of the most weighty elements in Southeast Asian relations.

Other ASEAN^{*} countries are not contiguous to Indochina, and with the exception of Indonesia and the Philippines they have small populations,

^{*}Association of Southeast Asian Nations

and most have weak armed forces and potential communist "liberation" forces within their own borders. Furthermore, with the Mui Bai Peninsula south of the Mekong Delta available for airfields for that sizeable communist Vietnamese air force, and naval bases for that now sizeable communist navy, Malaysia's water barrier (for example) may appear to be shrinking (besides their 2 ex-Soviet frigates and numerous other smaller Soviet supplied vessels, the Vietnamese inherited 1 ex-U.S. frigate, 2 ex-U.S. corvettes, and 14 landing ships as well as dozens of other sizeable navy vessels when South Vietnam fell^{*}). In any event, ASEAN nations are said to have been genuinely alarmed by the Vietnamese invasion of Cambodia and fear the diplomatic strengthening of Vietnam and the Soviets.^{**} Most ASEAN countries are likely to be afraid to help Thailand as Pakistan fears to help Afghanistan, and for the same reason--they may become the next target of at least Vietnamese-supported internal communist problems.

In Kampuchea and Laos, Vietnamese and local friendly forces mop up operations against dissident elements, who, without significant outside help, do not at present look particularly threatening to the Vietnamese-backed government. As these areas become more "stabilized" (as is likely to happen) second-rank Vietnamese forces (and at least in Laos, often even local forces) should be able to take over, releasing first-line Vietnamese troops. (At present there are 40-odd thousand

^{*} The Military Balance 1980-1981, p. 76.

^{**} The Christian Science Monitor, June 7, 1979.

Vietnamese troops in Laos and there are 180,000-200,000 in Cambodia.)^{*} Vietnam itself harbors some dissidents which may cause a requirement for some first-line troops to keep order, and the Chinese border area must be manned by considerable contingents.

The most likely scenario for the future seems to be for a relatively low-level of anti-government insurgency in Kampuchea and a gradually stabilizing situation under the watchful eye of the Vietnamese occupation army. For Thailand this means that for all practical purposes, from a military point of view, she will have a "common border" with Vietnam, and in actuality will have a common border with a Hanoi-dominated Indochina Federation, which includes Laos and Kampuchea. Of the countries in this area, only China could challenge this powerful confederation.

Should such an operation be planned by the Vietnamese, however, a build-up in Kampuchea near the Thai border would be necessary and the resultant troop movements perhaps could not be fully concealed. Thus, the Thais and the U.S. may have enough advance warning to enable them to work out a defensive strategy. Despite the ideological difficulties mentioned earlier, China has threatened to launch another attack on Vietnam should Thailand be invaded, which they might or might not carry out. The existence of the threat, however, would be enough to force the Vietnamese, as mentioned earlier, to retain a significant portion of their forces in the north in case the Chinese did attack. Nonetheless,

^{*}The Military Balance 1980-1981, p. 76.

they still have sufficient armor to allow them to assign several hundred big tanks to the Thai operation and the Soviets can be expected to supply more if it is felt necessary. Thus, the Vietnamese have the capability of overwhelming the Thai forces while simultaneously providing significant, but not totally adequate, protection against Chinese attacks.

If the U.S. opts to support the Thais with military force in the event of a Vietnamese attack, much would depend on when and how much "strategic" warning of the attack was forthcoming. If there were little warning, our options are relatively limited in the initial stages of the action. Time would probably not permit movement of significant U.S. ground forces to the theater; hence at least initially, the Thais must perform do the ground fighting alone. It might be possible to augment Thai armor via airlifted tanks and crews, but this would be a limited operation and might not be tried for fear of losing them in a too little too late situation. Assistance from other ASEAN nations would be token at best and probably would not materialize at all unless the Vietnamese thrust was contained and the fighting bogged down.

With even a moderate amount of time to act before the attack, however, the one area where the U.S. could provide effective aid would be in the air. The Seventh Fleet could provide air support to the Thais and PACAF could rapidly transfer elements of the 13th Air Force from the Philippines to Thailand if an attack were anticipated. Backup from the 5th Air Force could also be provided if time permitted. Thus, unless the Vietnamese achieved relatively complete surprise, the U.S. could provide assistance to Thailand in the air if it chose to do so.

The manner in which air support, particularly naval air support, was provided would be subject to several considerations. For a Southeast Asian country, the Vietnamese have a capable air force and a large one. Therefore, unless the U.S. were willing to conduct preemptive air strikes against Vietnamese military air fields which successfully eliminated the V.A.F. as a factor, the presence of the Seventh Fleet carriers in the Gulf of Thailand could be dangerous, since the possibility of Vietnamese air attack would be present. Such an attack could be mounted in force, making it necessary to retain an adequate fighter defense, thus diluting the air support capability of the Seventh Fleet. If, however, the Indian Ocean task force were to be employed, operating west of the Malay Peninsula, in the Bay of Bengal, as soon as they could get on station, access to the target area would be direct and as close to the battle area as it would be from the Gulf of Thailand, but further from the air bases in the delta of Vietnam. The support aircraft could cross the Kra Isthmus, thus obviating the need to obtain overflight permission from a third country. If circumstances permitted (e.g., large-scale destruction of the V.A.F. aircraft), Seventh Fleet carriers could eventually be employed from both areas. In any event, over 300 naval aircraft could be deployed, assuming the presence of four carriers in the area.

(Of course, one critical factor in provision of air support to Thailand, against a really large Vietnamese attack, would be the initial stockpile of air-dropped ordnance in the battle zone, which we will not consider because of the nature of this study.)

Here again, however, more so than elsewhere, the host nation is likely to be leery of using U.S. pilots to operate over enemy-held territory. When we deal with Hanoi to get the captured ones back (for we will not conquer and occupy Vietnam), Thailand may well feel that we are likely to abandon her and, if so, the Thais could lose much, or eventually all of their country, in exchange for these prisoners.

Primarily in the mountains, and on the Kampuchean side of the border, the lack of population and the nature of some of the targets might sometimes favor free-fall ordnance (including cluster weapons), since "area targets" such as base camps, POL and ammo dumps and vehicle parks in unpopulated wooded areas where specific aiming points may not be discernable, could at times be of primary concern. PGMs could, however, be profitably employed against armored columns, and against bridges, and similar fixed targets where accurate placement was critical. It might be possible to use such weapons closer to built-up areas, and collateral damage would be avoided. In some cases all civilians may evacuate areas in advance of the invading forces, creating maneuvering problems for the Thai ground forces on their side of the FEBA, but further reducing the possibility of civilian casualties due to friendly air action at the FEBA.

2. The Threat to Northeast Thailand

If a Vietnamese attack came in the Korat Plateau area in the Northeast, it would probably be quite different in nature from the situation previously postulated. In such a case, Bangkok would probably not be the primary target because of the distances involved.

Operations of a larger nature originating and supplied through Kampuchea, however, e.g., the systematic conquest, occupation and subjugation of Northeast Thailand, could be somewhat more bothersome for the Vietnamese. It is claimed that the inherent Cambodian dislike of the Thais and their traditional attempts to subvert or conquer Cambodia, is surpassed by the Khmers' hatred of the Vietnamese who have, over the centuries, not only attempted to influence and subvert the Cambodian government, but to convert the society so that it was closer to the Vietnamese model. This includes antagonisms toward the Khmer type of Buddhism. (All of which may also tend to reflect an even more fundamental Sinic vs. Indic cultural conflict.) It is claimed that the Thais, on the other hand, were much less heavy-handed, and even when they had conquered Khmer territory, as long as the Khmer administrators swore allegiance to the Thai king, they were allowed to keep their posts with few traumatic changes in the daily routine. Furthermore, the Thais had no quarrel with the type of Buddhism practiced in Cambodia. This hatred for things Vietnamese could encourage guerrilla activities in Cambodia, but it does not by any means guarantee success against Vietnam. For example, there is a similar feeling among Poles against the Russians, and if anything, this anti-Russian feeling is even stronger among East Germans and Czechoslovakians. Nonetheless, all the Warsaw Pact nations submit when the mighty Soviet Union issues firm directives concerning their foreign and many domestic policies. It is true that "counter-revolutionaries" have arisen occasionally, but when the indigenous governments couldn't or wouldn't handle them, Soviet military forces quickly solved the problem. Vietnamese

troops quickly solved most of the problem in Kampuchea recently, and continue to "solve" the problem in the Cambodian back-country today.

It would be of interest to know whether anti-communist insurgency operations, either at home or in occupied territories, will be successful against the Vietnamese government. There are several instances where post-World War II communist insurgency operations have collapsed under pressure from non-communist counterinsurgency movements, but there is no record of any non-communist insurgency movement being used successfully against communist counterinsurgency. Even Cuba, the traditional land of endemic revolution, has seen none get a foothold in the 20 years of communist domination. The same holds true for that centuries-old hotbed of revolution, the Balkans. From Angola to the Ukraine, foreign communist troops and their police have wiped out or driven out the anti-communist guerrillas.* And not only do they understand the application of the iron fist ruthlessly and relentlessly, as long as a vestige of a movement exists, but they also understand that they must be ever alert to stamp out any flickering beginnings of a new opposition in the same way. Such tactics do work, and with a generation or two of controlled information and border sealing, a large portion of the population will not be truly aware of the freedom and even the culture which is lost or transformed. The important thing, therefore, is probably not whether there are going to be anti-communist insurgencies but whether they can receive enough external assistance to make them a real threat to the "stability" of the Hanoi regime in Indochina.

* Angolan anti-communist guerrillas survive because of support from South Africa and sanctuary across the border. Anti-communist insurgencies without such outside help traditionally fail.

In Indochina, however, we may see the first protracted attempt at insurgency by communists against communist counterinsurgents. This could make a difference in the effectiveness of the counter-insurgency operations. The new government in Phnom Penh, for example, with pressure from, and the assistance of Hanoi, will probably use the traditional, proven communist totalitarian tactics not only to control the citizenry but to stamp out any opposition, with the highest priority, of course, going to active, armed revolutionary opposition. The remnants of the Pol Pot forces which have dispersed into the countryside are also ruthless in their activities, and aware of how to control not only their own forces but the population under their command. Nonetheless, it remains to be seen whether they can sustain themselves against the communist Vietnamese-dominated counterinsurgency activities being used against them. (At the moment, things do not look bright for the Pol Pot forces.)

In this case, we have both sides with the same willingness and ability to use ruthless organizational and ideological activities along with similar police and military activities. The availability of troops, arms, and equipment in numbers which lie heavily on the side of the counterinsurgents could well make the difference, just as it has weighed heavily in the successes of other communist and non-communist counter-insurgency operations. (The only threat to "stability" in Hanoi's Indochina may again depend on outside help, e.g., if Chinese "volunteer" guerrillas and large amounts of materiel were sent into Laos to support a "Laotian war of national liberation.")

Perhaps herein lies a large area of danger for Thailand. In the not-too-distant future communist insurgents may very well require greater sanctuary from which to operate into Cambodia, and possibly also Laos. It

would be to Thailand's benefit to keep the new Phnom Penh government and its Vietnamese ally from being too strong in the Cambodian and Laotian areas near its borders. On the other hand, if the Thais allow the Pol Pot and other communist and non-communist guerrillas to use Thailand as a sanctuary and a source of supplies both from Thailand itself and China and elsewhere, there would be a strong incentive for the Hanoi-dominated Vietnamese confederation to stamp out that sanctuary and cut off those supplies. There were some activities earlier in the ongoing Vietnamese effort against the Pol Pot forces which indicated that Thailand had already acquiesced in some tentative movement in that direction. For example, in 1979 at least one large armed group of Pol Pot guerrillas "escorted" a column of people variously estimated as from 30,000 to 40,000, out of Cambodia into Thailand, along the Thai side of the border for a way, then back into Cambodia again. Furthermore, even the program of dispersing refugee relief agency food and clothing into Thailand to Khmers who come out of Kampuchea and then return with their supplies, seems to have looked to the Vietnamese as support of Pol Pot forces. In any event, Vietnamese forces crossed the border in force on at least one occasion and hit a refugee camp which was dispersing such supplies.

Thailand must weigh the eventual outcome of the military/police operations across the border on the part of Hanoi against the willingness of China to use military force to come to the assistance of Thailand if she should be overtly or covertly invaded by Vietnam or an Indochina Federation under Hanoi. She must consider the possibility of her indigenous guerrillas turning to Hanoi for assistance in the absence of Chinese help. This would be no more drastic than when Cambodians in the Khmer Rouge

actually aligned themselves with Vietnamese communists against the government in Phnom Penh, or when communist Chinese lined up with communist North Vietnam and the U.S.S.R. against South Vietnam and the U.S. Furthermore, if Thai communist guerrillas pressed for a "war of national liberation" in Thailand, even if backed by Vietnam (and a Vietnamese invasion behind such a screen of "indigenous 'communist' freedom fighters" would be the natural way to proceed), it could be very difficult for China to send PLA troops to aid the "capitalist pro-Western" government of Thailand against this "obstreperous" but "fraternal, socialist, liberation" movement. One hope for Thailand might be for her to declare herself to be "communist," of the Chinese variety. Though similar ruses have been used before by the Thais, in this case it would be particularly risky, for China still may not come to her aid, and even if she did the Thais might find themselves with a mentor who insisted that they install real communists in power, and real communist totalitarianism might clamp down in Thailand. Another way might be for Thailand to try to get closer to Moscow with the hope that the Soviets will stay Hanoi's hand. If she entertains such ideas she may eventually have an opportunity to try them out. For example, one paper reported that the Kremlin invited Thailand to attend as an observer at the 1979 Comecon meeting.* Thailand turned down that offer, and though there apparently have been no other offers to date, there may be later.

One of the greatest dangers to Thailand (besides a drive on Bangkok) is likely to remain the larger Vietnamese attack behind a Thai "liberation

*The Christian Science Monitor, June 7, 1979.

movement" mentioned above. The initial goal of such an attack may even be the partition of Thailand along the North-South Phetchabun mountain chain (maximum altitude 4000 ft.).

Air attacks to blunt such an invasion of Northeast Thailand would be striking the same kind of targets we hit in Vietnam, in an area which is very similar to sections of Vietnam. On the Laotian side of the Mekong there are areas of forest interspersed with rice paddies and farmland. Wooded highlands are found in several areas not far back from the border. On the Thai side, the Khorat Plateau in Northeast Thailand is relatively level (and only about 1,000 ft. average elevation), covered with thorny scrubs, stunted trees, bamboos and sparse grass. The southern edge of this plateau borders on Kampuchea. The demarcation line follows the crest of the low Phanam Dongrak Mountains (about 1,000 to 2,400 ft. above sea level). The mountains ringing the Khorat Plateau are blanketed with evergreen trees. Some alluvial lands along the rivers on the plateau provide well-watered areas the year round and are the source of the main crop, rice. Cattle raising extends over a wider area. In general, this is good tank country, and we can expect the Vietnamese to exploit their advantage in this mode of combat.

Unlike some of the regions in Africa and the Mid-East discussed elsewhere in this paper, Thailand has a population density in excess of 177 per square mile, and even in rural districts, like Northeast Thailand, this figure will be about 100 people or more (the least densely populated mountain areas of the north are over 80 people per square mile). Furthermore, since these people cluster together near cultivated areas, and since only 20 percent of the country as a whole is cultivated, there are heavily

populated rural areas. In Northeast Thailand, most people will be clustered near the minority of cultivated areas, and the population density in these areas could be quite high. (Many areas of the country have over 700 people per square cultivated mile, and on the Malay peninsula section of Thailand it reaches 3,000 people.) The vast majority of people in Northeast Thailand will be in the vicinity of villages and the communication lines connecting them.

Though this district is overall less densely populated than coastal Vietnam, the cultivated/village areas are often likely to raise grave problems of collateral damage. Furthermore, unlike the Vietnamese, the Thais traditionally live in houses built on stilts, so they cannot have the instantly available "air-raid" shelter trenches dug in the earthen floor of so many Vietnamese peasant homes. The Thais will need more time to take cover. PGMs will be called for here against many targets because of the range requirements, danger of collateral damage, ease of target acquisition, etc. On uninhabited areas of the plateau, free-fall cluster weapons might be useful against the usual "area" targets, such as vehicle parks, dumps, etc., where natural or man-made camouflage or spoofing prevent specific aiming points to be discerned.

Also, if the Thai air force is to participate, they may not be able to be checked out on PGMs quickly enough to use them. Here again, we would have to assure that PGMs and/or free-fall weapons, even when dropped by Thais, observe our collateral damage restrictions.

J. Cuba

There have been many suggestions and actually one serious attempt since Fidel Castro and the communists came to power to overthrow the Cuban government through the use of armed force. Nor has this thought dimmed into non-existence in the minds of the people who consider the problem. It is true that the Soviets and President Johnson assumed an implicit guarantee of the communist government of Cuba by President Kennedy during the Cuban missile crisis; at least there was an assumption that no attempt to overthrow the communists in Cuba would be allowed to originate in the United States, and we have strictly adhered to that policy based on both premises since 1962. Nonetheless, since the communist Cubans have not only spread their attempts at subversion in Latin America (recently to an alarming degree and with considerable success in Central America), but have also exported them to other parts of the world, and have actually become the "Gurkhas" of the Soviets in many sections of Africa and even the Middle East, the idea of nipping the trouble in the bud has started to surface again. (Mr. Edwin Meese, Counselor to President Reagan, has indicated that the United States "does not rule out" stopping communist arms shipments to Central America by actions which affect the primary actor in the Western Hemisphere--Cuba, and as Republican candidate, Reagan, during the 1980 Presidential campaign, suggested blockading Cuba as a response to the Soviet invasion of Afghanistan.)

In any event, with Cuba only 90 miles off our shore, it is clear that if anybody should do anything about Cuba it would be hard for the

United States not to feel that she should be in some way involved. There are a dozen different scenarios that one could conceive of which might cause the United States to wish to take action against Cuba; most of them would probably begin with some unacceptable act by Cuban military personnel backed by the Soviets.

We may be outraged by, for example, large Cuban/Soviet military support of a communist "national liberation" group in a place such as the Dominican Republic, and after this "last straw," we may become very serious and committed and resolved to reverse trends not only there but in Central America, Angola, and/or Ethiopia. Cuba, the source of much the trouble, might be considered the right place for American military action. Under most scenarios, an American ability to cause a reversal of Soviet policy in Cuba is certainly greater than it is in Afghanistan. We might have relatively easy logistic access to Angola, compared to the Cubans and the Russians; and certainly our NATO allies, if they were ever to show such an inclination, have good logistic capabilities to Africa, and of course the South Africans have all kinds of competence in this area. A surprise attack (normally preferred) on Cuba, however, is much more feasible for American troops.

Although an assault on Cuba by American forces would be much easier than carrying out one in some distant part of the world, it would not be as easy as it would have been twenty years ago. During the Cuban Missile Crisis the Organization of American States (basically Latin America) apparently told President Kennedy that they would support any

action he felt necessary. Today we have no such support. In fact, in 1980 the President of Mexico told Castro that should the U.S. blockade Cuba, Mexico would take action against the U.S. (presumably cut off oil and gas shipments.) The Mexican President also went out of his way to express his friendship for Cuba the day after the U.S., in 1981, presented Mexico with quite convincing evidence that Cuba and the Soviet bloc were shipping arms to the communist-led guerrillas in El Salvador. Furthermore, Cuba, this communist power of less than 10 million people now has 206,000 men in the armed services, primarily in a large standing army of 180,000 men, with over 600 heavy and medium battle tanks and some amphibious tanks, 100 self-propelled guns, and 45 FROG-4 surface-to-surface missiles.^{*} (Soviet combat troops in brigade strength are on the island, along with many more "advisors."^{**}) Not until we get to the giant Brazil with 126 million people do we find as large a Latin American army (182,750). The Cubans also have 90,000 ready reserves for that army and 100,000 peoples' militia to back it up to some extent.

^{*} The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adlar & Son, Ltd., Bartholomew Press, 1980), p. 81. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

^{**} It is interesting to note how far our leaders had strayed from reality and traditional U.S. foreign policy goals. When the debate over that Soviet brigade in Cuba took place in Washington, in 1979, the questions all revolved around the threat it posed to the U.S. No one mentioned the Monroe Doctrine, or its main aim in keeping any new foreign military forces out of the Western hemisphere--to avoid the danger to the freedom of choice of the people in the country where the foreign military forces reside. This danger is as real today as it ever was. This Soviet praetorian guard can do much to discourage a coup to overthrow Castro and the communists, no matter how popular such a move might be.

Brazil, too, has something like 200,000 public security forces and a state militia in addition, but, to repeat, its population is over 12 times the size of Cuba's--126 million versus 9.9 million for Cuba. Cuba also has a 10,000 man navy and a 16,000 man air force. The air force has 168 combat aircraft of which 78 are modern Soviet MiG 21 interceptors; about evenly split between interceptor and "fighter-bomber" squadrons are 20 MiG 23s (perhaps Soviets would be flying these latter planes in any war Cuba might have). The remaining combat planes are MiG 17s, and 19s. The Cubans have an unspecified number of SA 7, and 144 SA 2/3 and SA 6 surface-to-air missiles.*

Currently about 40,000 Cuban military personnel are in Africa, primarily in Angola (19,000) and Ethiopia (16,500).**

There seems to be some popular support in Cuba for at least some of the government programs which are "egalitarian" in their outlook, that is, universal education, medical care, etc. The underprivileged also probably would like the redistribution of goods through rationing and so forth. The Cuban economy did not do well during the 1960s and 1970s, but the "underprivileged" may see gaps closing between them and the "middle class" even though it is more a factor of the middle class sinking down than their going up. In any event, large numbers of this "underprivileged" group of people are likely to be friendly to the government, at least on some issues. On the other hand, communistic atheism does not sit well with Cuban Catholics, and despite efforts by a

* The Military Balance 1980-1981, pp. 79 and 81.

** Ibid., p. 81.

few clerics to find common ground with communism on "humanitarian" grounds, the vast majority of clerics and lay Catholics remain hostile to communism and unfriendly with the Cuban Communist Party. The vulnerability and fragility of the society and the government are unknown factors. It is by no means inevitable that a popular revolution will be triggered by an invasion, particularly if the goal of the invader is seen to be the restoration of the status quo ante, or there is some doubt about his winning. The goals and the military activity of the invader, therefore, should be designed not to solidify the people behind the government, if possible to encourage at least their neutrality, and to clearly "look like a winner."^{*} Avoiding collateral damage, besides for moral and ethical reasons, is usually important in encouraging the alienation of the people from an unjust government. Encouraging a revolt, however, makes it essential that we win, lest the revolutionaries are left to the tender mercies of that government when we leave.

The geographic situation in Cuba is not very conducive to defense against a country with the ability to seize and hold control of the air, and with a large amphibious force capability. The island is 749 miles long and has a median width of only 62 miles. Furthermore, unlike other islands in the Antilles, it does not have a mountain spine running

^{*} Fiascos like the "half invasion" which the Bay of Pigs was forced by political decisions to become, should not even be considered. People are not likely to rise up against a totalitarian police state with a long memory, because of a "mock invasion" by a group of "losers."

down it; rather it is relatively flat with 3 mountain groups, one at the eastern tip, one at the western, and one in the central area.

The island of Cuba which was once believed to have been covered to the extent of about 60 percent of its surface by forests, now has only about 10 percent forest as a result of clearing for farm land. The rest of the island is savannah and some swamp land. There are extensive marshy areas along, and in some cases also deep inland from, some sections of the coast (e.g., the southern coast of Mantanzas Province), as well as barrier reefs and strings of cays along others, but there are still extensive beach areas contiguous to the plains areas. In fact, there are probably too many to defend against a sizeable amphibious force which can quickly shift and concentrate on one or more of them. This means that the island lends itself to being cut up in pieces, with possible areas of hold-outs in those marshes and mountain knots.

At least in clear weather in daylight hours, target acquisition in this kind of battle area is such that PGMs can normally pay high dividends. There is still a problem with camouflage, spoofing, etc., but the general environment would seem to lend itself to PGM use.

Counter air-strikes would be directed against the Cuban air force, which is likely to be primarily on nine air bases scattered over virtually the entire length of the island. Air defense suppression attacks against the SAM and radar sites would also be vital in an attack on this very well-defended island. It should be noted, however, that this is one of the many target areas (mentioned earlier) where under certain conditions, other weapons delivery systems, e.g., perhaps gun cruisers, or even destroyers, maybe using CLGP's, could reach not only

the outlying air defense systems but the primary naval and some air bases. Surprise night attacks in bad weather, with guns (or cruise missiles) might take out air bases and degrade air defense capability for the following counter-air and other strikes by aircraft. The runway cutting weapons should be PGMs and sheltered or revetted aircraft on the ground should be targets for PGMs or cannon fire.

Ground support targets in this operation would first be those associated with preparing and protecting the beach-heads where the landing forces would be going ashore. Here again, gun fire from the ships may play this role (particularly with CLGPs), better than aircraft could play it, but as the troops moved inland, the same role as indicated elsewhere for ground support would apply. The beach-heads would have to be defended against the 600 Cuban tanks, some of them perhaps manned by the brigade of Soviets mentioned earlier. Assuming that an attack on Cuba would be carried out with any "style," much should depend on surprise, which would mean that perhaps the aircraft could catch a lot of these tanks before they were actually deployed. In some sense, therefore, the battlefield interdiction role might be as important as, or even more important than, the close air support role, and if things were done right there would still be a role to play in preventing the Cuban tanks from massing against any particular vulnerable American unit, even after American tanks were ashore.

The deep interdiction of Cuba, of course, would be a sea blockade, and to implement this, some sea control missions may be necessary for U.S. aircraft directed against the Cuban fast-attack craft armed with

surface-to-surface missiles, and perhaps even their torpedo boats. If ships should try to run the blockade, aircraft may also be needed to frustrate such attempts.

It is unlikely that any attacks on Cuba would result in significant attacks on the military equipment manufacturing facilities, but it is likely that in the second and third phase of the battle there might be attacks on somewhat less than precisely located guerrilla bases in the few mountainous areas on the island. This could lead to the kind of attacks by air that were somewhat similar to those launched in Vietnam, where specific points of impact for weapons were not that clearly known. It is to be hoped that in this case, forward air controllers would be better able to indicate such points of attack, but if not, we may have again some "area" targets here, simply because of the difficulty of precise point target acquisition in certain "base areas" which cannot be left unmolested. In this case there may be a role for free-fall weapons of both the standard variety and cluster weapons. In the first phase of the battle also, where there might be sections devoid of civilians with large areas of deployed infantry and armor under conditions where individual aiming points are hard to determine (because of rain, fog, dust, chemical smoke, spoofing, etc.) and AA cover is not too dangerous, free-fall cluster weapons might be in order.

In fact, in all instances, the question of collateral damage would have to be carefully considered. Cuba is a relatively densely populated island, which means that there are built-up areas all over it, in addition to which there are several heavily populated areas (well over half the

population is urban), the primary one, of course, being Havana where over 20 percent of the population resides. If fighting should develop in these built-up areas, the calls for PGMs to take out military targets would be heavy. In fact, even on the first surprise attack against air fields, naval installations, military compounds, tank parks, etc., where these installations are close to inhabited areas, the requirement would be for PGMs.

K. Central America: Introduction

In light of the changing situation in the Caribbean and Central America, the small nations south of Mexico may be good examples of areas where possible assistance to, and dominance of, revolutionary forces from outside the countries might turn the section into one where the U.S. might have to help, and might even have to consider the delivery of U.S. ordnance either by our own fixed-wing aircraft or those of friendly forces. Much as we hate to do it, attempting to prevent a takeover by a totalitarian force, probably of the left, may mean being willing to go to that level of violence, particularly if imported military muscle enables the enemy to escalate to a relatively high level of military activity. As pointed out earlier, it is interesting to note that one of the largest changes in the area is actually being instigated by us, that is, the United States' abandonment of the Panama Canal Zone with its military bases and even counter-insurgency school (open to Latin American military personnel), in that area. The eventual removal of this stabilizing force from the Canal Zone (an "American presence" in Central America), may prove to be a prime factor in increasing the danger of future (particularly leftist) outside-backed and dominated revolutionary activities escalating to something much more than the perennial disturbances in the Central American countries. Simultaneous growth of Cuban communist influences in the area, as well as the more blatant communist neo-colonial policies practiced by her sponsor the Soviet Union, with which the Cubans collaborate on a massive scale, are, of course, also primary factors for the instability and new dangers in Central America.

In addition to there being evidence that the government of Panama is on very friendly terms with Cuba, there are several countries in Central America that are now experiencing, or may later experience, Cuban/Soviet/Soviet-bloc backed revolutionary activity and warfare to a level that U.S. assistance may be required to attempt to help stem totalitarian takeovers, e.g., in Nicaragua, El Salvador and Guatemala. If this were to occur in the last country, this might cause some difficulty for Mexico, whose oil fields are not too far from the border of that country. Mexico is clearly large enough and powerful enough to handle Guatemala, based purely on the issues of wealth, population, size of army, and so forth. Her difficulty lies in the problem she has opposing foreign leftists without having trouble with her own leftists internally. Currently she might find adequate support for repelling a military or paramilitary invasion by leftist troops or guerrillas from Guatemala (although we do not know how long this will continue to be so). She might find little support, however, for a Mexican invasion and occupation of Guatemala if the government of Guatemala were left-wing or even communist. Today, aid to leftist guerrillas comes into Guatemala from, among other places, Mexico.

The following section gives some details about the more unstable countries in Central America, including some of the factors that would influence whether or not free-fall weapons or any other weapons coming from the United States would be used in these countries, and if so, how they might be used. It should be noted that, as in so many "Third World" countries, not only the weather, terrain, and collateral damage factors affect possible weapons application, but the variegated

demographic make-up of the countries often makes it hard to determine which area contains a "friendly" populace. These peoples will not necessarily band together behind a government or political movement. The application of U.S. ordnance, by our own or friendly forces, while always observing constraints imposed by morality and ethics, may therefore also cause our and/or our allies military operations to proceed in ways which do not dampen these centripetal ethnic/political forces among the population, which the enemy may be attempting to turn into the "sea" in which his guerrillas or troops may "swim."

The military activities we are likely to have to undertake or support in Central America would be in a very difficult milieu. Yet we may find that we cannot allow events to continue in the direction much evidence seems to indicate they are now going, and not just because we feel for people living under totalitarian rule, though this is, and traditionally has been, adequate reason for the U.S. to act. In addition in this case, however, we may eventually end up with a loose (or even well-knit) communist confederation, or at least communist and communist-dominated states, stretching from the Windward Islands to Guatemala and El Salvador. Furthermore, through ideological indoctrination, covert and overt insurgencies, violence and chaos, this ideological/military movement is likely to try to work its way north and south from that axis, endangering Colombia and Mexico. As mentioned above, this confederation is very likely to be under the domination of the U.S.S.R. through Cuba.

The level of at least conventional military activity should not escalate to the level and/or at the rate likely in other scenarios in

this paper dealing with other potential trouble zones. The weight of ordnance and sorties flown, therefore, are also likely to reach an earlier and lower peak rate, but still may be necessary. The targets will differ significantly from many of those in the other scenarios, LOC targets will be fewer, smaller and more likely to be purely military in nature (e.g., "base areas," dumps, etc.), and fewer bridges and other general civil LOC-supporting targets (though the trucks, etc., themselves may actually be, or at least be hard to distinguish from, civilian ground transport vehicles). If the LOCs from Cuba are mostly dependent on fishing boats and other small vessels, among the thousands of such craft in the area, acquiring and identifying these LOC targets from the air could be difficult. Direct support targets too will be different, smaller, harder to acquire and identify, etc. Fundamentally, a tight surface naval blockade and help in sealing the borders against men and materiel from Cuba and elsewhere, and support in the ground warfare operations, would be most helpful. If the situation is critical and for some reason such help is not, or cannot be given, and help to friendly air forces, or even U.S. air support, can be, then we may find ourselves with the difficult task of trying to use airplanes in this sensitive, complex milieu.

L. Nicaragua1. The People

Nicaragua is essentially a mestizo (mixed white-Indian) country of an estimated population of 2.4 million. The ethnic composition has been estimated at 70% mestizo, 17% Caucasian, 9% Black, and 3% Indian. The ladinos (mestizo and whites) are located primarily in the Pacific lowlands and the central highlands. The black population, mostly of Jamaican origin, is concentrated on the Caribbean coast, but in recent years has begun to migrate to Managua. The majority of the population (96%) is Catholic and most of the rest are Protestant. English is spoken among the blacks on the Caribbean coast.

The country can be divided into three geographical zones: Pacific, North and Central, and Caribbean. The Pacific zone is the most densely populated, the North and Central zone is less populous, and the Caribbean zone has the least population. About 40% of the population is urban.

The Nicaraguan ladino (the term indicates Hispanization rather than ethnicity) identifies 3 major ethnic groups within the country: the Spanish-speaking ladino majority, the Indians who are Hispanicized or otherwise culturally modified Indians, and Blacks and persons of mixed black-Indian ancestry, called samboes or creoles. Other ethnically distinct groups, found mainly in the larger cities, are not numerically important. Chinese, Jews and Levantines are particularly active in urban retail trade.

The Indian population (3% of the total) is concentrated in three major areas: (1) the Matagalpa, who are extensively Hispanicized, in the central highlands; (2) the Miskito, Sumu and Rama Indians are on the Caribbean coast and the eastern highlands--some of these Indians speak English and are Protestants, reflecting the cultural influence of several centuries of British domination of the Caribbean coast; (3) the Subtiaba and Monimbo, who are in the Pacific lowlands and are Hispanicized.

In the recent past, Nicaragua traditionally has had a three-class system of social stratification based on ancestry, power and influence: the upper class, predominantly urban and including landowners, merchants and the more powerful political figures and military officers; the middle class, composed of small landowners, less wealthy merchants, and lesser government servants; the lower class, agricultural and industrial workers, Indians, and landless peasants. Upward mobility within the social system was possible but difficult. There was much dissatisfaction about the distribution of land, wealth and power.

2. The Economy

The resources of Nicaragua are primarily agricultural. Some 60% of the people are engaged in agriculture, although just over 10% of the land is cultivated. The chief exports are cotton, coffee, sugar and meat. Good crops and high export commodity prices have contributed to the average growth of 6% of the economy since 1960. Forests cover over half the country. Ninety percent of the timber is mixed tropical hardwood which is difficult to exploit.

The growth of light industry progressed despite the disastrous effect of the 1972 earthquake. There are limitations to industrial growth due to the absence of important mineral resources and the poor infrastructure (as compared to that of neighboring Central American countries).

3. Political Background

As in other Central American nations, dissension between the two major parties, the Liberals and the Conservatives, has kept Nicaragua in turmoil. The unrest led to a U.S. marine intervention in 1912 to restore law and order. Thus began a period of active U.S. involvement in Nicaragua that culminated in the support of the Liberals by the Somoza family since the 1930s. Anastasio Somoza ruled the country until his assassination in 1956. His elder son, Luis Somoza then ruled until 1963, when he was succeeded by his foreign minister, Rene Schick. The latter died before his six-year term was over, and was succeeded by the younger son, Anastasio Somoza Debayle in 1967, who subsequently remained in power until driven out of the country in 1979 by the Sandinista-led revolution.

Other political parties included the small Social Christian (PSCN) party; the Nicaraguan Socialist Party (PSN), dominated by the Communists; the Republican Mobilization (MR), a leftist party with lower middle class and worker support.

Currently, the political situation in Nicaragua seems to be turning further left. The business community fears the Sandinistas will take the revolution into communism, and on April 21, 1980, the Sandinistas-dominated government announced that Sandinista representation in the proposed council of estate would be a clear majority, rather than one-third, as agreed to in the original government plan. The only independent newspaper in the country was simultaneously shut down by a strike. Two of the last moderates in the revolutionary government resigned and many feel that even if a handful of other moderates are appointed to the government it will only be a facade to allow a somewhat less than immediate transition to a communist government. There are reports that even now virtually the entire Sandinista Council was hand-picked by Cuba's Castro.

Pessimism has deepened over the possibility of keeping Nicaragua from falling completely into the totalitarian communist/Cuban/Soviet orbit. Such a development could endanger all of Central America, and indeed arms and men to support the leftist revolutionary armed forces in neighboring El Salvador have been pouring across the border. Nicaragua receives communist-supplied arms largely from Cuba.

4. Military Issues

Prior to the fall of the Somoza regime, the regular armed forces of Nicaragua numbered about 8,000 men and were armed with a few obsolete M-4 "Sherman" medium tanks, a few artillery pieces, a few dozen armored cars, a few old B-26s, and light COIN aircraft and a few naval patrol

craft. When the Sandanistas took over there were two of the M-4 tanks and 4 of the B-26 bombers left; 45 of the armored cars remained. The armed forces are now being reconstituted.*

The current and future status of the official and unofficial military and "paramilitary" units in Nicaragua depends on the amount of outside "involvement" in the country.

In Nicaragua, most of the country is covered by forests: almost a third of the country is covered by tropical rain forests, but a quarter of it is covered by seasonal tropical forests and seasonal swamp forests. There is only a small portion of pine savannah, and about 15 to 20 percent of the country is covered by mountain vegetation.

Here we find the phenomenon of the cathedral forests in the tropical forest area. That is, that the solid canopy of the tall trees shades the area below to the point where all the vegetation dies, and what is found is a very dense cover of foliage high above the ground with the large bowls of the trees "supporting" this cover. In the event of an outbreak of warfare there, these places have, in effect, one large ready-made solid "camouflage net" above them, and relatively clear ground below. These last areas, particularly in the eastern section of the country, are basically unpopulated, and would provide very satisfactory base areas for regular and irregular troops. Target acquisition and identification could be relatively difficult. This is a classical

* The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adlar & Son, Ltd., Bartholomew Press, 1980), p. 36. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

situation where covert intelligence might give a relatively good location of a "base area," dump or enemy unit, but precise location of point targets for precision-guided munitions may be very difficult to obtain. (This dense cover of leaves and limbs would probably make FLIR and radar location devices significantly less effective.) Free-fall cluster weapons or general purpose HE, however, may in some cases be effective to some degree when a target area cannot be left unmolested and it has been narrowed down to a section in an unpopulated area small enough to be adequately "blanketed" with free-fall weapons.

This of course may take a significant weapons load for the planes carrying out the missions, which would mean that if such loads would be delivered, we might have to deploy a significant portion of our carrier fleet not far off the coast. Before we agreed to give away the Panama Canal, we could count on the ability of our fighter-bombers from the Zone to carry out such missions within their combat radius into the distant future. Now, however, we will eventually lose that important military base, and may even in future times of crisis actually lose the use of this vital canal ("closed for repairs"). Central America can always be reached with the B-52s and other strategic bombers, of course, and from a purely military and collateral damage point of view, these desolate forest areas might be suitable places to use them. But here again, the image of these huge intercontinental bombers flying against a group of Spanish-speaking regular or irregular troops, "fighting for their homeland," could have bad political effects at home and abroad.

Most of the rain forests lie in the central and eastern part of the country, and could form a conduit for Cuban reinforcements coming in from Honduras, or even from the coast. Even if this were to occur, however,

the situation mentioned above may still apply. Since the Cuban "Gurkhas" would not show themselves to TV crews, and since they would have native communists with them, if only as guides, if we were to use these B-52s or other heavy bombers to drop free-fall weapons, we would still be pictured as Yankee strategic bombing forces pulverizing helpless Central Americans, and it is likely to be compared to the bombing in Vietnam (which was compared to the bombing in World War II, with the implication that bombing rain forests is the same as bombing Dresden or Hamburg). This may change, but if we use those big aircraft in such a war we should know that we are likely to have to pay a high political cost. Using B-52s against a small country such as this is inviting that kind of criticism from the local and foreign people who like to attack this kind of operation regardless of how logical it is from a military point of view, or even when the "helpless" targets are fundamentally base camps of a foreign army (as were the North Vietnamese camps in Laos and Cambodia). If, despite such issues being very serious factors in the decision process, therefore, heavy bombers must be used in such wars to preserve the level of freedom and human dignity which exists in the area being overrun, they should confine their strikes to unpopulated areas, particularly with free-fall weapons. If the big bombers were to be used, it would be best if they launched PGMs for precision strikes "in style," with few or none of the civilian population even seeing the big planes. Collateral damage from any aircraft must not occur, for all the moral, ethical and political reasons mentioned earlier, but such damage from heavy bombers is seen by some, perhaps illogically, as worse.

In other parts of the country the situation would be quite different. In effect, the dominant areas of the Nicaraguan economy and society at

large, can be described in terms of two geographic core zones. The primary national core area occupies most of the northern part of the Great Rift, and the western coastal block. It extends from Corinto in the north to San Juan Del Sur, and contains the national capital and metropolis Managua, the principal sea port Corinto, most of the second and third rank towns and cities, a large part of the rural population and agricultural production, almost all Nicaragua's industry and the greatest concentration of transport facilities and communications. The second core contains the concentration of population in the western part of the central highlands and centers on its regional capital Ataguapa, Nicaragua's third city. It contains almost all the important agricultural areas and population, and the most successful part of the pioneer thrust toward the east. Modern surface transportation in this area, however, leaves a lot to be desired, primarily because of the rugged terrain. Its development has been relatively slow.

Both these regions have tropical wet and dry climates, and all the coastal areas have seasonal tropical forests. Immediately inland from them are seasonal swamp forests while the highlands have mountain vegetation, broad leaf types of trees such as oak, but at the higher elevations and in more northerly areas one finds North American pines. It is in this mixed forest area that much of the newer pioneer agriculture, including coffee growing, is located.

Clearly, any military activity in any one of these areas, particularly the coastal area, would be quite different from that which one would be likely to carry out in the tropical rain forests to the east. The coastal region, that is, the Pacific Zone, is the most populous of the

country and contains almost 60 percent of the population. The North and Central Zone contains about 35 percent of it. The Atlantic Zone, wherein one finds the rain forests mentioned before, contains only 6 or 7 percent of the population (about 6 or 7 people per square mile). The population density of the Pacific Zone is about 150 people per square mile, while in the North and Central Zone it is about 50 people per square mile. The Pacific Zone is an area of about 7,000 square miles; the North and Central Zone is about 13,000 square miles; while the Atlantic Zone is almost 26,000 square miles. In other words, although the country itself has a small population of about 2.5 million people, they are heavily concentrated in the Pacific Zone and, to a lesser degree, in the North and Central Zone.

Waging warfare in these regions, particularly in the Pacific Zone, would be somewhat similar to waging warfare in other relatively densely populated areas. Not only are there more people about which means that many more of the targets would have to be considered in light of the possibility of collateral damage, but the targets themselves will be different. For example, there is no transportation net to speak of in the Atlantic Zone, though there is a significant one in the Pacific Zone and a growing one in the Highlands. In a type of civil warfare approaching the conventional level, some fixed targets along LOCs would probably occur here as well as the targets of opportunity which occur in any battle area, at almost any level of combat. Collateral damage problems in these regions, however, would be much greater and the probability of acquiring point targets in the battle area probably more likely than in the densely wooded sections to the east. PGMs are likely to be most appropriate here.

Air defense systems in these areas are unlikely to be too lethal unless the combat should escalate dramatically and "Gurkhas" from Cuba and elsewhere entered the conflict in large numbers, and with significant amounts of modern equipment.

M. El Salvador

This neighbor of Nicaragua is a very unstable entity and is in the throes of a "revolution" by both the right and the left against a more centrist government, in which the Sandinistas and their communist allies from outside Central America are making relatively large efforts to help El Salvador fall into the communist orbit.

1. The People

El Salvador is the smallest mainland country of Central America with only 8,200-odd square miles of land, but it is also the most densely populated, with a density of 512 people per square mile. In 1980, the population had been estimated at 4.8 million. Its annual growth rate has been 3.1 percent in recent years. In 1977, over 40 percent of the population was urban.

The population is remarkably homogeneous, with almost 90% of mixed Indian and Spanish ancestry. It is estimated that close to 10% of the population may be of pure Indian blood, but fewer than 3% retain even a modified traditional way of life. These Indians, remnants of the Pipil-speaking Indians of Mexican origin, occupy a few villages north of Sonsonate in the southwest of the country. Culturally, Salvadoreans are ladinos who speak only Spanish but may practice Indian as well as European customs. The country is largely Catholic but there are also some Protestants. The purely Caucasian people amount to less than 5%.

In 1932 an uprising of Indians and poor peasants in the southwest area of Sonsonate was met with severe reprisals and up to 30,000 people may have been killed. It appears that after these events, Indians

deliberately began to wear ladino clothing and speak Spanish more often, accelerating the process of acculturation.

With a rapidly growing population (over 50 percent are under 20 years of age), El Salvador has no underdeveloped land that could support people in agriculture. Industrialization, though advanced compared to other Central American countries, has not achieved a stage where it could productively absorb those moving out of overcrowded rural areas.

Plagued by the evils of both latifundios and minifundios, El Salvador suffers some of the most acute social and economic problems in Central America. Some 40 percent of its territory is under cultivation --one of the highest ratios in Latin America. The originally fertile soils have undergone serious erosions. The most fertile lands were owned by a few rich families (reputedly 14 families) who raised commercial crops (coffee and cotton) for export, not food for the nation (this land distribution is undergoing drastic change under the current land reform program, discussed later). Throughout this century, El Salvador has been importing basic foods (wheat, corn, beans) from Honduras, Nicaragua, and elsewhere. Only in the last decade has the country been able to produce sufficient rice for home use. In itself, this need not be evil, and could reflect a "specialization of labor and soil" and a real comparative advantage for El Salvador in the coffee-growing business. It would only show good economic sense to raise this very valuable crop to generate foreign exchange, some of which would go to import the cheaper food crops. This possibly good economic practice could be bad

politically, however, if attacked with biased inflammatory arguments from the left.

El Salvador was reputedly known as a country practically owned by the 14 families mentioned earlier. In effect, following the marriages between rival clans and the industrial development in the 1960s, it would seem better to say that the country was run by at least 50 families.

2. The Economy

There are few places in Latin America where the distribution of wealth was as unequal as El Salvador. According to the census of 1971, less than 2,000 agricultural units out of some 300,000 in the country occupied 20 percent of the cultivated land: they consisted of domains over 100 hectares (247 acres). The biggest landowners, the Dueñas family, owned over 1 percent of the country's territory. Some 30 families owned over 1,000 hectares (2,470 acres) in a country of 22,000 square kilometers (8,300 square miles). At the other end of the scale there were over 130,000 units of 1 hectare, representing less than 5 percent of the cultivated land.

Over 60 percent of the people are farmers. (75 percent of the fertile land was owned by 10 percent of the farmers. The top 10 percent of the population had 40 percent of the country's income.) Most farmers were tenants, paying rent in kind or cash to a landowner. The smallest plots were concentrated in the central and northern section: on generally poor soil. There, steep slopes have been badly eroded by the complete disappearance of the original vegetation. The fertility of much of the land on these farms was greatly depleted by large-scale cultivation

of indigo during the 18th and 19th centuries. Over 60 percent of rural families were landless. There has been a crying need for agrarian reform and the current junta government is finally enacting a serious one. Of 376 large estates, 150 are said to have already been divided among the peasants. Under the current program no one will be allowed an estate of more than 350 acres. When the program is completed the 376 large estates will be no more, and two out of every three peasants will own their own land. The government is also taking over the banking system, long the power base for the oligarchy mentioned above.

Agriculture and cattle raising are basic. Main products are coffee, cotton, sugar, sorghum, livestock, poultry, shrimp. Since 1960 the manufacturing industry has been growing rapidly. Products include textiles, footwear and clothing, food and beverages, and chemicals. In fact, El Salvador is usually considered the most industrialized country of Central America. The per capita income is about \$600. A higher concentration of capital permitted El Salvador to take the lead in industrial development ahead of Guatemala and Honduras. About 15 percent of the working population is engaged in manufacturing. In the 1960s, the contribution of manufacturing to the GNP increased from 16 to 20 percent while that of agriculture fell from 31 to 26 percent. Government aid and participation in the Central American Common Market were key factors in industrial growth.

3. Political Background

As elsewhere in Central America, frequent revolutions have marked the history of El Salvador. Relative stability was achieved in the period

1900 to 1930. Since the 1931 election of General Maximilian Hernandez Martinez (1931-1944), every succeeding President has been an army officer. In 1948, a military junta spearheaded by reform-minded young officers and backed by intellectual reformers installed Mayor Oscar Osorio as President. But it was not long before the young officers turned their backs on social reform. The constitutional government of Lt. Col. Jose Maria Lemus (1956-1960) was ousted by a military coup in 1960. The ensuing military-civilian junta lasted one year before losing power to another military directorate. A government-sponsored new party of National Conciliation was formed in 1961 and headed by Julio Rivera, who became President in 1962. That year, a new constitution was promulgated, providing for a highly centralized, republican government with independent executive, legislative and judicial branches. Executive power is vested in a President, elected for a single 5-year term, and a Council of Ministers appointed by the President. Legislative power is vested in a unicameral Assembly with 54 deputies popularly elected to 2-year terms on the basis of proportional representation. Judicial power is in the hands of a Supreme Court, whose 10 Justices are appointed by the Assembly for 3 four year terms. The country is divided into 14 departments headed by governors, who are appointed by the President. Municipal councils, elected by popular vote, are responsible for local government.

The National Conciliation Party (PCN), a centrist party favoring some reform and enjoying support of the military, has remained in power since its founding in 1961. Julio Rivera was succeeded as President in 1967 by Fidel Sanchez Hernandez. Since 1964 the principal opposition

party has been the Christian Democratic Party (PDC). Related to other Latin American Christian Democrats (Chile, Venezuela), the PDC advocates social reform from a position to the left of the PCN.

Smaller opposition parties include on the right:

--Salvadoran Popular Party (PPS)

--United Independence Democratic Front (FUDI)

And on the left:

--National Revolutionary Movement (MNR)

--National Democratic Union Party (UDN)

--Revolutionary Action Party

--Communist Party (PCES)

With the industrial development of the 1960s and the creation of the Central American Common Market (CACM), Salvador had several years of prosperity. However, the economic boom did not filter down to the poor. Profits from exports were reinvested in the industry. There has been nevertheless a growth in the urban middle class, who increasingly sought to challenge the oligarchy. The oligarchy, during the elections of 1972 and 1977, through fraud, did not permit the center-left Christian Democrats to come to power, thus sowing seeds for the current unrest.

The brief war with Honduras in 1969, followed by the closing of the border between the two countries, was traumatic. Part of the industrial output that normally went to Honduras had to be routed elsewhere to developed countries. For light industrial output, Salvador came to compete with Singapore.

The economic and overcrowded conditions of El Salvador have encouraged workers to seek work outside the country. A large number found work in neighboring Honduras. Honduras complained that up to 300,000 Salvadoreans settled in that country. In June 1969, some 10,000 were expelled and returned to Salvador, who promptly broke off relations with Honduras. Salvadoreans are considered the most industrious people of Central America. Many do rather well when they emigrate, arousing resentment in neighboring countries. In July 1969, the spark that started a war between the two countries was provided by a soccer game. It was well understood that the roots of friction were deeper. Salvadorean troops marched into Honduras up to 18 miles at some points. The OAS, backed by Washington, achieved a cease-fire after five days, and later effected a withdrawal of Salvadorean troops. An estimated 75,000 refugees returned to El Salvador, adding to the overloaded economy.

In the elections of 1972, no candidate received the required popular majority. The Assembly proclaimed the PCN candidate, Col. Arturo Molina Barraza, the new President. The opposition Christian Democratic candidate, Napoleon Duarte, came in a very close second. The PCN candidates swept legislative and local elections in 1976 after the opposition candidates withdrew, claiming fraudulent elections. The 1977 election was won amidst great controversy by Molina's defense minister, General Carlos Humberto Romero. Voters were intimidated and the opposition candidate, claiming fraudulent elections, went into exile in Costa Rica.

During the 1970s, guerrilla organizations became fairly active. The principal groups were the Popular Liberation Force (FLP) and the Revolutionary Army of the People (ERP). ERP activists seized El Salvador's main radio station in 1975 and called for the overthrow of President Molina's government.

General Carlos Humberto Romero, elected to the Presidency in 1977 following allegedly fraudulent elections, was overthrown in October 1979 in a coup led by Colonels Jaime Abdul Gutierrez and Adolfo Arnoldo Majano. Three civilians subsequently agreed to join the two military revolutionaries in forming a 5-man "revolutionary junta."

The coup was staged in an effort to put an end to a prolonged period of severe political unrest, marked by assassinations by extremist right and left wing forces, arbitrary arrests, kidnappings, and by occupations of embassies, churches, and public buildings by left wing guerrillas. However, it appears that the timing of the coup may have been too late, as the polarization between right and left may have been too advanced to allow for a centrist, moderate solution to the strife in El Salvador.

The junta dissolved the existing Congress, 50 of whose 54 members belonged to the governing National Conciliation Party (PCN), suspended the Supreme Court, and promised amnesty for all political prisoners and exiles, and freedom to form political parties of any ideology. The new ruling junta was favorably received by the Christian Democratic Party.

Following a very disruptive period in 1980, however, at which time four American women (three of them nuns) were murdered, the junta of two military and three civilians appointed one of its civilian members,

Napoleon Duarte, A Christian Democrat, President of the junta. This man, the ex-mayor of San Salvador, who (as indicated earlier) drew such a large vote when he ran for President in the 1970s, has good liberal credentials and political and administrative experience, but some refuse to believe the government per se is moderate because the conservative Colonel Jose Guillermo Garcia, is still Secretary of Defense. To give some idea of the complexity of the political situation in this small country, we should note that the main opposition to the ruling junta was carried on by the following organizations:

Opposition Forces

The main source of opposition to the government was the Popular Revolutionary Bloc (BPR), estimated to number over 50,000 people, including the following:

1. Federation of Christian Peasants of El Salvador
2. Agricultural Workers' Union (UTC)
3. Trade Union Coordinating Committee (CCS)
4. National Association of Salvadorean Teachers (ANDES)
5. Revolutionary University Students (UR-19) based at University of El Salvador
6. Revolutionary Forces (FUR-30) based at University of Central America

The armed wing of the BPR is the:

7. Farabundo Marti Popular Liberation Force (FPL)

B. Other major opposition organizations:

1. The United Popular Action Front (FAPU) and its guerrilla wing, Armed Forces of National Resistance (FARN)
2. February 28 Popular Leagues (LP-28) and its guerrilla wing, People's Revolutionary Army (ERP) (formed after the fraudulent election on 28 February 1977 of General Romero)
3. Political Anti-Fascist Detachment (DPA) and its guerrilla wing, People's Revolutionary Armed Forces (FRAP)
4. Liberation Leagues (LL) and its fighting wing, Revolutionary Party of Central American Workers (PRTC)

Now, the two other civilian junta members are in some sense also "part of the opposition," though it is doubtful that they would strongly oppose the reform programs of the junta to which they belong. This is quite different from the position of extremists of both the right and left. These rightists oppose land reform, for example, because they do not want the rightists landlords to lose their land to the peasants, and the communists oppose any reforms which help the peasants, the workers and the poor, since such action steals the communists' thunder and makes it more difficult to bring these groups into a totalitarian communist takeover of the country.

Clearly, it is going to be difficult for the new "reform" government to carry out land reform and other programs in this volatile political situation as long as the left and the right does not want it to occur. (Indeed, there are indications that the pace of land reform has slowed recently.) On the other hand, the real danger would seem to be primarily from the left, mostly because support for the right (as compared to the left) is slight from outside the borders. The Soviets, Vietnam, Ethiopia, East Germany, Cuba and other Soviet bloc communist powers are said to be heavily involved with supporting the leftists through Nicaragua and other Central American countries. Nor is this just a recent occurrence. According to the testimony of Deputy Assistant Secretary of Defense Frank Kramer before Congress in 1980, "our intelligence agrees that Honduras is being used as a conduit for men and weapons." This testimony also included references to "aircraft landings at isolated, remote haciendas" as part of the constantly growing Cuban involvement in

El Salvador. The strong Cuban influence in Nicaragua next door, however, seemed to provide one of the greatest communist conduits into El Salvador as men and arms poured in from that direction. The communist party and two of the "popular forces" which formed the Salvadoran Revolutionary Coordinator of the Masses are said to have aimed at stepping-up the violence in order to thwart the government land reform programs, etc. (which, as noted, infuriate the left since they weaken its propaganda), and lay the grounds for revolution. The great increase in assassinations after 1978, the seizing of Embassies, bombings in the cities, and guerrilla activity in the countryside, indicate the degree of violence occurring in the country. It is extremely difficult under these circumstances to carry out reforms, and even more difficult to encourage foreign investment, if indeed the violence looks like it is getting out of hand. (The lives of representatives of "capitalist corporations" are already in danger there and it is hard to import the kind of technological assistance that developing countries need if the lives of key people in these efforts are constantly in danger.)

Often the part played by rightist extremists in El Salvador, some of whom may be members of the national guard, have been identified with the government, which is tarred with the same brush as the right-wing terrorists. This poses a difficult problem for the United States, since it is very hard to generate the kind of public support abroad, and for that matter in the United States, to support the government in its fight against leftists. The extreme leftists, despite the outside support and influences, have been quite successful in convincing many, who are

themselves not communists, that they truly speak for the people, while the Christian Democrats, for example, who have drawn heavily in the polls in past elections, and even the centrists and somewhat right of center groups who have also drawn very heavily, are often not looked on as representative of the people. In other words, we have the typical problem of naive and/or leftists with relatively simplistic approaches-- somehow these people in El Salvador are being exploited by the "capitalists" and a "right-wing fascist" government, who are the bad guys, and the extreme leftists have always been the "supporters" of the "people," and therefore they are the "good guys" and inevitably they will succeed because they have the support of the people. There is also another self-fulfilling prophecy here, because even among people of influence in the United States, there is sometimes a desire to "for once to be on the winning side" which tends to discourage support for centrists governments who are facing the inevitable results of guerrilla activity, particularly leftist guerrilla activity.

Indeed, as indicated earlier, there are rightists in El Salvador who are just as anti-land reform program as are the extreme and violent leftists revolutionaries, and it is important not to be identified with such groups. On the other hand, the centrist government should not always be tarred with the same brush, but this simplistic bad guy/good guy approach tends to foster just this.

In any event, assuming that we do not take adequate action of the right sort in time to influence events in the direction of a stable centrist government, we may eventually find ourselves in a situation

which is quite similar to Nicaragua, and an 11th hour attempt to stop the fall of a centrist government to leftist revolutionary/military groups would require aid in the form of direct military assistance or assistance to some "ally" in the area.

At the moment El Salvador has a relatively small military force which itself includes some fixed-wing aircraft, but it is unlikely that at its present size it could be adequate to handle a full-scale communist-backed "war of national liberation" with supplies from the U.S.S.R. coming in via Cuba through Honduras and Nicaragua.

4. Military Issues

El Salvador has 7,250 men under arms, 7,000 of whom are in the army, primarily in infantry companies but with one paratroop company and two ranger companies. There are also 5,000 para-military forces. The army has twelve light tanks, twenty armored personnel carriers and 30 105mm howitzers. The air force has a few dozen fixed-wing and rotary-wing aircraft. A handful are jets.*

If, as a last resort, the U.S. or "friendlies" should be required to apply ordnance from aircraft to help to avoid a takeover by totalitarian communist forces, El Salvador may present more problems than Nicaragua. As indicated earlier, El Salvador is a quite densely populated country. It has three cities of over 100,000 people, and a total of nine with

* The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adler & Son, Ltd., Bartholomew Press, 1980), p. 86. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

over 30,000 people. But the country is still essentially rural, with many small villages and single farms scattered over the landscape.

Only 10 percent of the country is covered with forest; the rest is savannah and farmland interspersed with shrubbery and individual and small clumps of trees. Along the Pacific coast and lowlands it is quite hot, but the inland areas are more temperate because of the elevation. Here again, it is a place where PGMs may be more apropos because of the likelihood of better target acquisition and identification, and the greater population density in the many populated areas scattered across the country. There are sections of the highlands that are relatively uninhabited, however, and there may be some spots there where cluster or free-fall munitions may be used if precise aiming points cannot be acquired and AA cover is light or non-existent, but generally speaking, this place is quite different from Nicaragua with its heavy forest cover, for example. It is more like Cuba as far as the terrain and vegetation are concerned. (Checking out "friendlies" on air-delivered PGMs may again be a problem here.)

The stepped-up shipments of arms from the communists to El Salvador bodes ill for the anti-communist forces there. Clearly, in this area there is going to be an extremely difficult situation in case full-scale, violent civil war does break out, particularly from the point of view of someone trying to deliver ordnance with fixed-wing aircraft in support of one of one or more of the non-communist factions involved. It is difficult enough to identify the players on the ground, and there are

indications that the leftists may have already done things which were very hard to associate with them, perhaps even the violence at the funeral of Archbishop Romero. This is another reason for the requirement for extreme accuracy, superb target acquisition and identification capability with any kind of ordnance delivery, let alone that from fixed-wing aircraft. In fact, if a "war of national liberation" should break out here with the attendant guerrilla activities and military unit movements all over the country, just because of the dense population, difficulty in identifying units, and the general confusion to an outsider, at least, the use of free-fall weapons may be ruled out. Again, in addition to the ethical and moral reasons associated with collateral damage, there are political reasons why bomb impact points which are susceptible to criticism in the press must be avoided, particularly in this highly volatile, densely populated country.

N. GuatemalaI. The People

Guatemala is the most populous of Central American countries.

Almost half the 6.5 million population of Guatemala are Indians. The rest are generally designated as ladinos, and are either Spanish-Caucasian, or mixed-bloods, or even assimilated Indians. The term ladino is used chiefly in Guatemala, Honduras and El Salvador, and has a broader cultural connotation than the mestizo (mixed-bloods) in Nicaragua, Panama and Mexico. The pure Caucasians are few and live in urban centers and there are some Black Caribs along the Caribbean coast.

The ladinos speak Spanish, while the Indians speak some 17 Indian languages, of which the most prominent are Quiche, Cakchiquel, Mam, Kelchi, Tzotzil, Kanjobal, Potomchi and Ixil. A majority of the Indians do not understand Spanish. While nominally Catholic, as is the great majority of the country, many Indians have superimposed Catholicism onto their traditional forms of worship.

Social stratification among ladinos is based on lineage and wealth. Ladinos generally have European surnames, own homes with more than one room, and live in urban or semiurban environments. At the top of the social ladder are the wealthy descendants of Spanish colonists, few of whom have been able to maintain a Caucasian purity. At the bottom are the acculturated Indians who have accepted the customs and material attributes of Western culture. Even though purely Indian-blooded, they are considered ladinos (much as in colonial Angola, the acculturated Angolans were considered Portuguese). The Indians were descendants of

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the Mayans and during the colonial Spanish rule lived apart. Eventually tribes disappeared and were replaced by municipios (townships), the smallest unit of government, containing one or more villages. But the Indians retained most of their traditional customs. Each township evolved its own dialect, its particular clothing and its social practices. The cultural distinctiveness of the Indian communities is enhanced by physical isolation. Many Indians practice a syncretic religion composed of pre-Columbian beliefs and Catholicism, but "gods" and rituals differ from one township to another. Each Indian group produces its economic specialty which becomes the basis of trade among the townships.

Most of the Indians are subsistence farmers. Many raise sheep and some cultivate vegetables as cash crops which they sell in towns. Farming activities are supplemented with cottage industries (pottery, baskets, blankets, reed mats). Other Indians earn an income by working in coffee, cotton and sugar cultivation. (The Black Caribs, who are of mixed Indian and black heritage, dwell along the Caribbean coast and do not participate in the Indian township structure.)

Land is the most prized possession to Indians. No one feels secure unless he has a small plot to work. An Indian will sell land only if it is a question of survival, and any money left over is invariably spent in the acquisition of new land.

The problem of bringing the Indian into the mainstream of Guatemalan national life is much greater than in Mexico. Their principal social and political allegiance is to their municipio (township) and not to the nation.

2. The Economy

The Guatemalan economy, oriented mainly around agriculture, grows at about 8 percent a year. The per capita income in the late 1970s was \$850. The rate of inflation in the last three years has varied from 13 to 17 percent. The single, most influential determinant of the economy is coffee, which accounts generally for nearly half the total export earnings. Next to coffee, the country also produces cotton, sugar, beans, bananas, cattle, and spices. National resources are nickel and timber. Agriculture contributes about 27 percent of the GNP. Within Central America, Guatemala's growing light-industrial sector (prepared food, textiles, construction materials) exports a significant portion of its products to regional markets. The country is an active member of the Central American Common Market (CACM).

According to an agricultural census in the mid-1960s, nearly two-thirds of the farmland is owned by only 2 percent of the farmers. Nearly half of all farmers work plots of less than 3.5 acres. The inequality of land distribution underlies many of Guatemala's social problems.

3. Political Background

Three Branches of Government:

- (1) Executive: President, Vice President, Council of State (President elected for 4-year term; cannot be reelected).
- (2) Legislative: Unicameral Congress composed of elected deputies representing 23 electoral districts. Members are elected for a 4-year term.
- (3) Judicial: Supreme Court, lower courts, and some special courts having jurisdiction only over certain types of cases.

Local Government:

- (1) Departmental, administered by a governor, who is appointed by the President.
- (2) Township, administered by an elected municipal council consisting of mayors, councilmen and other officials.

--The 1965 Constitution guarantees individual rights, ownership of private property and universal suffrage to all persons over 18. Members of the Armed Forces may not vote.

--The Council of State, presided over by the Vice President, is composed of representatives of business, labor, agriculture and other sectors of national life.

Political Parties:On the right:

(1) National Liberation Movement (MLN)--(20 seats) was the party of Castillo Armas in the 1950s, now led by former Vice President Mario Sandoval Alarcon. Between 1956 and 1960, and between 1970 and 1978, the MLN shared control of the government with the Army. Although now formally in opposition, it retains close ties with the conservative military elite. The MLN actively supported Somoza against the Sandinistas.

At the center: four-government coalition (34 seats)

- (2) Institutional Democratic Party (PID)--(17 seats) on the center right, the PID is the main support of the present government.
- (3) Revolutionary Party (PR)--(14 seats) was the party of President Mendez Montenegro.
- (4) Nationalist Revolutionary Party (PNR)--(3 seats).

On the left:

- (5) Democratic Christian Party (DCG)--(7 seats).
- (6) Revolutionary United Front (FUR), a social democratic party.

Besides these officially recognized parties, there are also:

The Guatemalan Democratic Front
 The National Action and Reconstruction Party
 The National Integration Front (FIN), formed in December 1976 as the first party dedicated to Indian interests
 The Guatemalan Labor Party (PGT) is the communist party and has been underground since 1954

Opposition to the military regime of General Lucas Garcia is currently coordinated by the Democratic Front Against Repression (FDCR). It brings under a single umbrella 160 political, cultural, labor union and religious organizations. In Congress, opposition to repression is led by the Christian Democrats (DCG) and Social Democrats (FUR).

Guerrillas fighting the government have recently established a collective command. There are three main groups: the Guerrilla Army of the Poor (EGP), the Rebel Armed Forces (FAR) and the Communist Labor Party (PGT). Founded in 1975, the Guerrilla Army of the Poor draws its leaders from middle-class students and intellectuals and has been successful in drafting Indians to its cause--the first Guatemalan organization to have accomplished this feat. Indians have always avoided the political quarrels of the ladinos. The stronghold of the EGP is the impoverished Northwestern province of Quiche.

4. Military Issues

Guatemala has an army of 14,000 men equipped with some light tanks, armored cars and armored personnel carriers, and a couple dozen light howitzers. Its navy has 450 men and 14 coastal patrol craft and its air force has 450 men and, among other planes, 10 combat aircraft. It also has 3,000 men in para-military units.*

^{*}The Military Balance 1980-1981, The International Institute for Strategic Studies (Great Britain: Adler & Son, Ltd., Bartholomew Press, 1980), p. 82. This and all subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

These armed forces have been used repeatedly to put down indigenous armed revolutionary groups, but the infusion of foreign "professional revolutionaries" of higher combat capability (even a relatively small number) might change things significantly.* Here again is an area where Cubans could make a difference.

The geographic and meteorological features of Guatemala tend to cause the population to concentrate in the highlands in the southern and western portion of the country. This area has savannah land along the Pacific coast, and as the land rises toward the mountain chains, there are deciduous forests and the weather becomes distinctly cooler. The two mountain chains and the adjacent plateau area have relatively pleasant climates; in fact, in the really high areas, there is frost between December and February, and the mountains reach 13,000 ft. in height. Above 10,000 ft. the forests give way to bunch grass since the timber line occurs at about 10,000 ft. The whole northern section of the country, however, including the small area on the Caribbean, is quite different (this total area is approximately as large as the rest of the country which is so heavily populated). The northern section of this zone called El Pitan is equal to a third of the national territory, and extends into the Yucatan Peninsula. It ranges from 500 ft. to 700 ft. above sea level and is covered with dense tropical rain forests, occasionally interspersed with wide savannahs. It receives about 80 inches of rain in the north, and about 150 in the south annually. There is

* Only about 100 mercenaries under Michael Hoar, when added to the Congolese army, were enough to turn the tide against the Simba rebels, though, of course, this is not meant to equate the Guatemalan army with the Simbas.

much underground drainage, but there are still many lakes and basins which overflow and flood the land when the rains are particularly heavy. Rivers flow out of this area into Mexico, British Honduras, and into the Caribbean.

Combatting insurgents in Guatemala who fight in a guerrilla mode, or even tend to set up base areas in remote regions for relatively standard infantry units, could be a difficult operation. Finding such units in El Pitan would be particularly difficult, and the deciduous forests of the uplands could form similar problem areas although they are likely to be less densely foliated and not so remote from populated reaches, thus providing a better possibility for intelligence on the insurgents from the locals. There may be some information which can give general locations of these light infantry units and perhaps even identify a particular bend in a river, etc., where a light infantry camp may be located.

The normal residents of El Pitan are clustered around permanent water sources as they were during the times of ancient man, because although rainfall is heavy it is absorbed rapidly by the porous soil. Except for the heavy wet season, this tropical rain forest area finds the available water confined to rivers and certain springs. This means that large areas between rivers are generally unpopulated. All of El Pitan had less than 20,000 people in 1974. About 30 percent of these people were Indians, and the general density per square mile was less than any other department in Guatemala, that is, 2 people per square mile. Even

these numbers are deceptive, however, because as mentioned above, the people tend to cluster near permanent watering places, which means that for all intents and purposes, huge sections of El Pitan are uninhabited.

With land down to the coastal areas in British Honduras, and Honduras, and even a small section of Guatemala which borders on the Caribbean having a similar terrain and vegetation, the whole Caribbean coastline along Honduras, Guatemala, and British Honduras, is susceptible to penetration by cadres, and even large numbers of troops, to assist in "wars of national liberation" directed from outside the area. The danger of infiltration of people from Cuba with the know-how for developing a totalitarian revolutionary organization and a serious military operation, as well as the infiltration of arms, is something that must always be considered in Guatemala, and particularly in the El Pitan.

Other regions in the highlands, although more heavily populated (the department of Guatemala has about 1,000 people per square mile), often may have large unpopulated sections between the villages. Density of population for the country as a whole is well over 100 inhabitants per square mile, but as indicated above, as in other Central American countries, it varies widely from area to area. Generally it is more dense in the cooler highlands, and in the south rather than in the north. Villages in the highlands oftentimes are separated from their neighbors by particularly rugged mountain terrain or canyons where guerrilla forces, and even insurgent regular units, may function without direct contact with the villagers.

If fixed-wing aircraft-delivered ordnance were used here, the type of ordnance and the conditions for its use would vary from area to area (as it would in other Central American countries), according to the probability of collateral damage, ground cover and terrain. The level of warfare and perhaps, even in some cases, the level of AA cover, would of course also affect ordnance requirements. Generally speaking, though Guatemala has a much larger population and it is the most dense in the highlands rather than on the coast, the overall terrain, ground cover and demographic conditions which affect military operations in Guatemala are similar to those in Nicaragua, and similar problems would arise. That is, the collateral damage issue is likely to be less severe in the north and targets are likely to be harder to acquire and identify than in the south, which is somewhat like western Nicaragua or El Salvador. Depending on the level of warfare, in this more populated area there may be some fixed LOC targets too, for there is a well-defined transport network. In general, however, the targets there too will be military units, equipment, dumps, etc., and the danger of collateral damage will be high. Because of the fractionated ethnic makeup of the country (e.g., the many Indians who do not identify closely with "ladinos" or their governmental organizations), besides the moral and ethical reasons for avoiding collateral damage, here again there would be political reasons for not wanting aerial bombardment to identify our side as "the enemy" of these naturally alienated groups.

APPENDIX A

ONE EUROPEAN CENTRAL FRONT OUTBREAK SCENARIO

The milieu of this "outbreak" scenario is one of rapidly waning detente and, in fact, one closely resembling that of the "cold war." Under this scenario, and of particular interest to the study of fixed-wing aircraft munitions requirements, it is assumed that the NATO fighter-bomber strength probably has a significant conventional strike capability, but may also be very vulnerable to the first strike from the Soviet Union. In the 1980s, according to this scenario, despite attempted dispersal programs, this vulnerability of the NATO air forces still exists. Furthermore, the large number of Soviet tanks and other materiel superiority in Eastern Europe makes it essential that Americans have aircraft in the air to stave off armored drives in the event of a conventional attack.

It is clear in the following scenario that if the Soviet Central Committee wanted to take action but stay below the nuclear threshold, one of the most productive (if not one of the only) things that they could do quickly would be to launch an attack against NATO airfields to knock out our air power, and if they were lucky, one of the biggest segments of the residual fighter-bomber fleet of the NATO forces might be on the carriers of the Sixth Fleet and the Atlantic Squadron of NATO. On the other hand, it is also clear that under this type of scenario an all-out counter-air strike calls for a very risky decision, which could quickly get the Soviets into a level and an area of combat which they may wish to avoid, particularly if they were a little unlucky in their first counter-air strike.

(For good and valid reasons, however, both sides might want to restrict

air strikes the way the Chinese and Vietnamese did in their recent limited--1979--border war, to close support in the immediate vicinity of the FEBA only.)

The "battle" scenarios for the ground forces which could result from this "outbreak" scenario are much more complex and hard to write. In fact, writing an outbreak scenario for warfare of any kind on the North European plain is a difficult assignment. In light of the apparent Soviet goal to "Finlandize" Western Europe without risking a large war,* a postulated more powerful and more restless China on her Siberian frontier, and NATO's acquiescence in the Brezhnev Doctrine, the scenario of the all-out Soviet attack on Europe's central front (though essential to consider) seems somewhat less likely. Furthermore, such a Warsaw Pact attack could lead to a united communist Germany. With their experience with a united communist China on their far eastern frontier, the Soviets might be at least ambivalent about such a development. To have high violence threaten, if not occur, however, despite the desire of the top leadership on both sides that such violence should not occur, is far from impossible. One takes the easy way out, perhaps, in writing such "unintentional" type scenarios, but they are often no more incredulous than the "outbreak scenario" which really launched World War I; there is always some degree of the unexpected in crises, and all the high crises in Northern Europe since 1945 have occurred east of the Iron Curtain. (This scenario was written before the current--1980--problems in Poland began so they are not mentioned here.)

* Current conditions in the Labor Party in Britain (which is now said to be a "Marxist Party," many parts of which have close ties to Moscow) and the Marxist domination of the Left in France and Italy, seem to indicate a possibility of a large degree of success in Soviet policy.

The following scenario may be one of the more convincing "outbreak" scenarios concerning the unplanned-for outbreak of violence on the NATO central front, or at least as convincing as some of the outbreak scenarios which lead to some of the standard, unsuspected NATO "Soviet attack out of the blue" type battle scenarios. The importance of this type of outbreak scenario is that it demonstrates to some extent that such scenarios can set the stages for a quite different "battle scenario" and the very different close support strike requirements they generate. Such requirements need not be all that unlikely, but they are seldom generated by the other NATO scenarios. (We do not list here these "standard" scenarios and their strike requirements, for they are well known throughout the Defense community.)

We include only this one highly detailed outbreak scenario, but behind all the battle scenarios listed earlier such outbreak scenario thinking is at work. The potentially vastly dangerous central front in Europe is perhaps the best place to use as an example of such thinking. In this case we fail to heed many obvious "branch points" which could lead to a lessening or cessation of the confrontation to follow, as well as many to vastly increased violence. Valid arguments for doing both can be made in coming to an outbreak scenario, and details of the following scenario may make some of them clear.

I. An East German Uprising Scenario^{*} (by Frank Armbruster)

This scenario takes its beginning in an economic recession in East Germany which reduces the standard of living of the East Germans considerably below the very high level they have enjoyed (by East European standards) in the 1970s. There might have been other causes, perhaps even the granting of new freedoms--for instance, the freedom of assembly--before the populace was quite won over or had become sufficiently docile (as in 1956 the political relaxation implicit in de-Stalinization and the removal of oppressive secret police chiefs prior to the Poznan riots may have emboldened that city's workers). Whatever the cause, the scenario is based on the premise that crises have a habit of taking on a momentum and life all their own. Although this fact does not increase or decrease the probability of crisis, it does sometimes make actions that are seemingly obvious and appropriate when considered in the normal pre-crisis atmosphere quite difficult and costly to carry through when the crisis actually breaks out.

A. Background

During a period of general labor unrest in East Germany, the workers of the furniture industry in Schwerin walk out in protest against low wages, long hours, lack of consumer goods, and so forth. The workers gather in hostile groups in the streets, and other citizens begin to mingle

^{*}This scenario was adapted from one originally written for Hudson Institute Report No. 496-RR, "The Defense of Europe in the Pervasive Presence of Nuclear Weapons," March 16, 1965, Volume II, Appendix, under contract to the Systems Analysis Section of the Comptroller's Office, Department of Defense, and rewritten later for HI-1775-DP, "World Futures and Scenarios," March 9, 1973, under contract to Department of Defense Research and Engineering, Office of the Secretary of Defense.

with them. Police efforts to disperse the groups are inadequate, and by noon, the workers of the wool and dye industries of Schwerin have also joined the strike. It now appears that most of the population of the town of almost 100,000 is in the streets.

The GDR officials, after consultation with the Soviets, send word to the commander of an East German division to go to Schwerin and move his troops into the town to clear the streets. The commander issues this order, the division reaches the area, and a regiment moves into the edge of the town, there to be met by the mob. The workers appeal to the soldiers as fellow Germans to attempt to do something about the standard of living, and a mass meeting takes place in close proximity to the troops, who apparently are infected by the mood of the people and seem to have little desire to break it up. A section of the mob breaks off and attacks the East German secret police station in Schwerin and, to the cheers of the mob, hauls the security police from the building. The soldiers of the East German regiment in the outskirts of the town do nothing about this, either.

Word of the occurrences in Schwerin reaches the other two regiments of the division outside the town, and their officers warn the divisional headquarters that (à la Hungary in 1956; and Poland and East Germany; and Czechoslovakia in 1968; and Afghanistan's revolt against its Marxist government in 1979), their troops are becoming sympathetic with the populace, and the senior officers may not be able to keep their men

in line.* The divisional commander quickly orders the regiment that has started into the town to withdraw. Some of the units of the regiment do withdraw but others are intermingled with the mob and are obviously quite friendly with the people. Other groups of people approach the remaining regiments asking them for support in their strike. Here again, it is apparent that the soldiers are quite in sympathy with the people, and very shortly members of the mob are mingling with all the units. The mood of the crowds now seems to be truly gripping the soldiers, and the reliability of the GDR division has suddenly become suspect.

The Soviet CINC in Germany is informed of the situation in Schwerin and decides to send a Soviet unit there to see that the GDR division is disarmed immediately. It is now apparent that the initial cause of the strike and the near-riots have been superseded by a simple desire for mass protest against general conditions, including the political situation, in Schwerin and perhaps all of East Germany. The attack on the secret police station is indicative of what is really on the minds of the people; and a full-scale anti-government revolt in Schwerin and perhaps all of East Germany may be in the making--at least this is the way the situation is viewed by the East German communist government.

There are ample grounds for this attitude. There are signs of unrest elsewhere in the GDR, one near where an East German division is currently located; and news of the troubles in Schwerin seems to be spreading rapidly throughout East Germany despite the attempt made by authorities to cut off communications between that town and the rest of the country.

* As mentioned earlier, this scenario was finished before the current --1980--disturbances in Poland erupted, so no analogies drawn from it will be found here; references to Poland are to the 1956 events.

The Soviet CINC Group Soviet Forces Germany (GSFG) is not quite so pessimistic about the situation as is the East German government. He does feel, however, that if the disturbances around Schwerin cannot be quickly quashed, it could well get out of hand. So he transmits the order to disarm the GDR division there. (From here on an hour-by-hour scenario unfolds, with weather conditions, progressive times and dates, recorded at the far left side of each page.)*

Nov. 26 Units of the Soviet 32nd Motorized Infantry Division
 23:00 of the Second Guards Tank Army ** move into Schwerin and
 attempt to disarm the East German Motorized Infantry Division,
 but the GDR troops appear belligerent and the GDR commander
 hesitates to give the order to lay down their arms. The

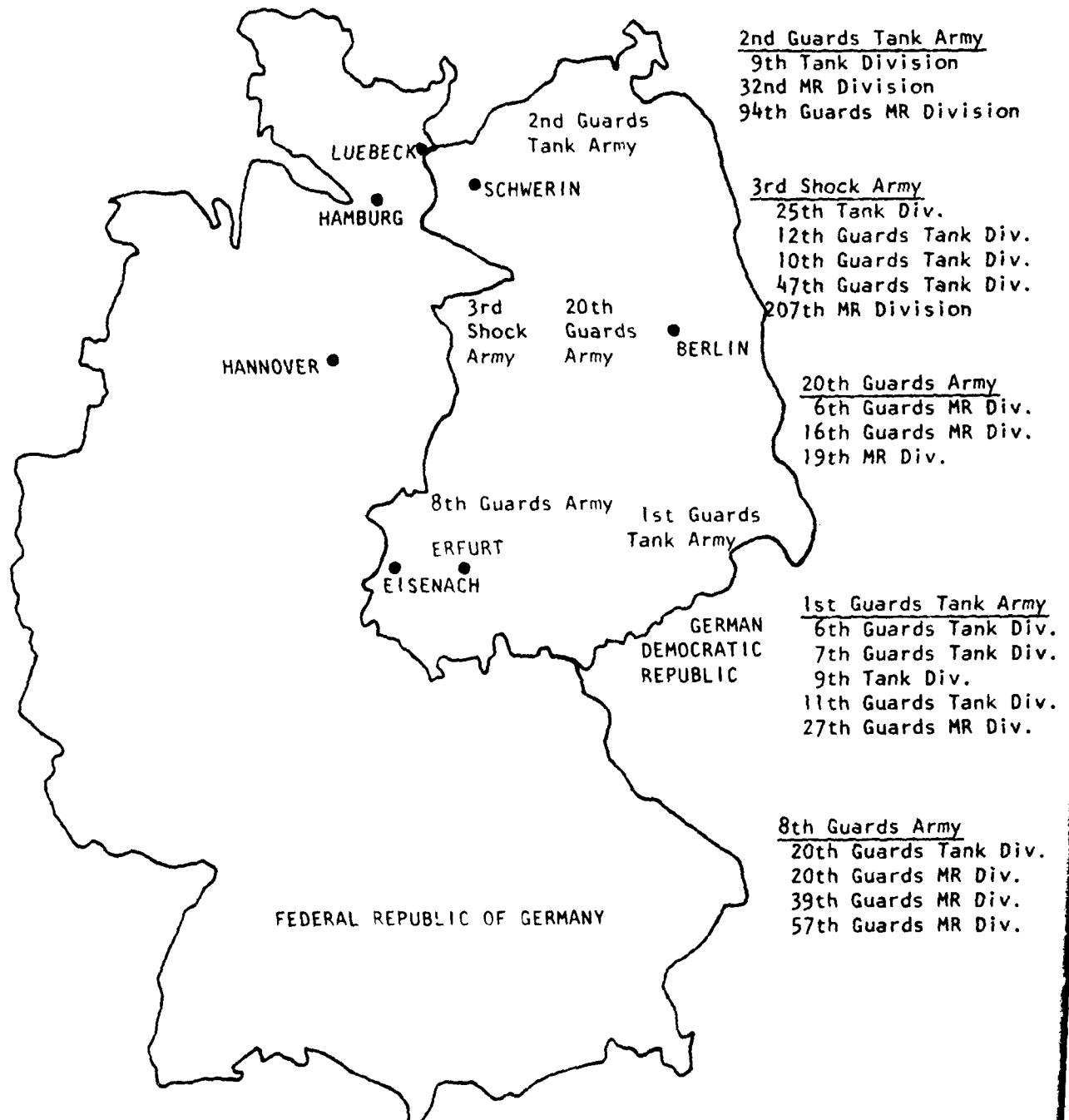
* This "outbreak" section of the scenario develops at a much slower and more orderly pace than did the events in Hungary and Poland in 1956, and in East Germany in the past.

** Order of battle and general locations of the Soviet armies in East Germany from Soviet Theater Strategy: Implications for NATO, by Jacquelyn K. Davis and Robert L. Pfaltzgraff, Jr., USSI Report 78-1, p. 37, United States Strategic Institute, Washington, D.C., used with the permission of the United States Strategic Institute. No attempt is made to specifically locate the Soviet divisions in their respective army areas; the numbers used are only to keep the scenario straight, any division identified at a specific place could actually be another division. The total number of units and their locations in the armies listed are as indicated in the source listed above.

The assumptions about the rough, general deployment of the East German army is that two of its six divisions are in the north of the GDR, two in the center, and two in the south. West German units are assumed to deploy as indicated as the scenario develops, but specific units are not identified--a total of twelve divisions are in this army: 6 panzer, 4 panzergrenadier, 1 mountain division, and 1 airborne division. The Military Balance, 1980-1981, The International Institute for Strategic Studies (Great Britain: Adlar & Son, Ltd., Bartholomew Press, 1980), p. 26. This and subsequent information from The Military Balance 1980-1981 used with the permission of the International Institute for Strategic Studies.

Chart 1

November 26 -- 23:00

Group Soviet Forces Germany (GSFG)

Order of battle and general locations of the Soviet armies in East Germany from Soviet Theater Strategy: Implications for NATO, by Jacquelyn K. Davis and Robert L. Pfaltzgraff, Jr., USSI Report 78-1, p. 37, United States Strategic Institute, Washington, D.C., used with the permission of the United States Strategic Institute. Two East German divisions are assumed to be in the north, two in the center, and two in the GDR.

Nov. 27 population of Schwerin is in the streets when a small Soviet
02:00 force moves in. The Russians run into mobs who are appealing
to the GDR divisional commander, who has come into the town,
to join in the revolt. Soviet troops have to fight their way
04:00 through the mob and open fire on the people, and security
forces of the GDR division open fire on the Russians in support
of the civilians. The Soviet commander orders Russian units
to cease their attempt to disarm the two GDR regiments outside
the city but to subdue the rioters and to take into protective
custody the divisional commander and regimental commanders,
particularly the one in Schwerin. When a regiment of the
Soviet 32nd enters the town, the units of the GDR division
turn spontaneously on other Russian troops outside the town.
The Soviet commander appeals to the Second Guards Tank Army
headquarters for help from the Soviet 94th Guards Motorized Rifle
Division. This request is passed on to CINC GSFG, who is keeping
close control of all Soviet forces.

His headquarters, however, is now besieged by reports
of disorder from all over the northern GDR. In fact, it has
just received word that a regiment of that East German division
in the other "troubled area" is leaving its caserns despite
the fact that East German army headquarters had sent messages
to all its divisions to remain in their caserns and cooperate
with the Soviets in restoring order--"lest the GDR be destroyed
in war." Furthermore, all the Soviet divisions have a normal

mission to deploy against West German units near the border in event of an emergency.

07:00 Soviet headquarters send two regiments of the Soviet 25th Tank Division of the Soviet Third Shock Army north toward Schwerin and orders the Soviet 94th of the Second Guards Army to move to the new "troubled area" and to be prepared to disarm the regiment of the GDR division if it does not return to its caserns. The commander of the Soviet 94th is ordered, however, not to attempt to disarm the GDR regiment without direct orders from military headquarters. He feels he should not antagonize the GDR division, particularly the two regiments still in their caserns. He therefore sends one of his regiments on forward to shadow the one "loose" GDR regiment but holds the other two regiments of the 94th in "reserve," well away from all three GDR regiments.

Elsewhere, in the Berlin sector, the nearest GDR division is staying in its caserns, but East Berlin's population seems to be joining in the national mood. The Soviet CINC GSFG is vacillating after the fiasco at Schwerin as to whether there should be an attempt to disarm this division close to Berlin, so that Soviet commanders on the spot cannot get permission to carry out the operation.

The Soviet CINC GSFG is beset with bad news from all over East Germany. The Soviet Central Committee in

Moscow, sitting in constant session, is bombarding him with queries, advice and demands for action, but will "hold him responsible if he triggers a general revolt by irresponsible measures." Furthermore, he is reminded of his responsibility to be ever-ready to repel a NATO attack and so he must put down the revolt in East Germany yet not disrupt his deployment for his defense against NATO. This is becoming more and more difficult to do and it inhibits his movement of units out of their assigned areas. The most pressing problems, however, arise in the Schwerin area and in Erfurt, in the southern sector of the country, which is now gripped by the revolt.

Nov. 27 In the latter city, a GDR Division sent to quell the
08:00 "trouble," is in direct contact with the mobs in the street
and not only refuses to put down the disturbance but has
Dawn deployed units outside the city as well.

Dawn deployed units outside the city as well.

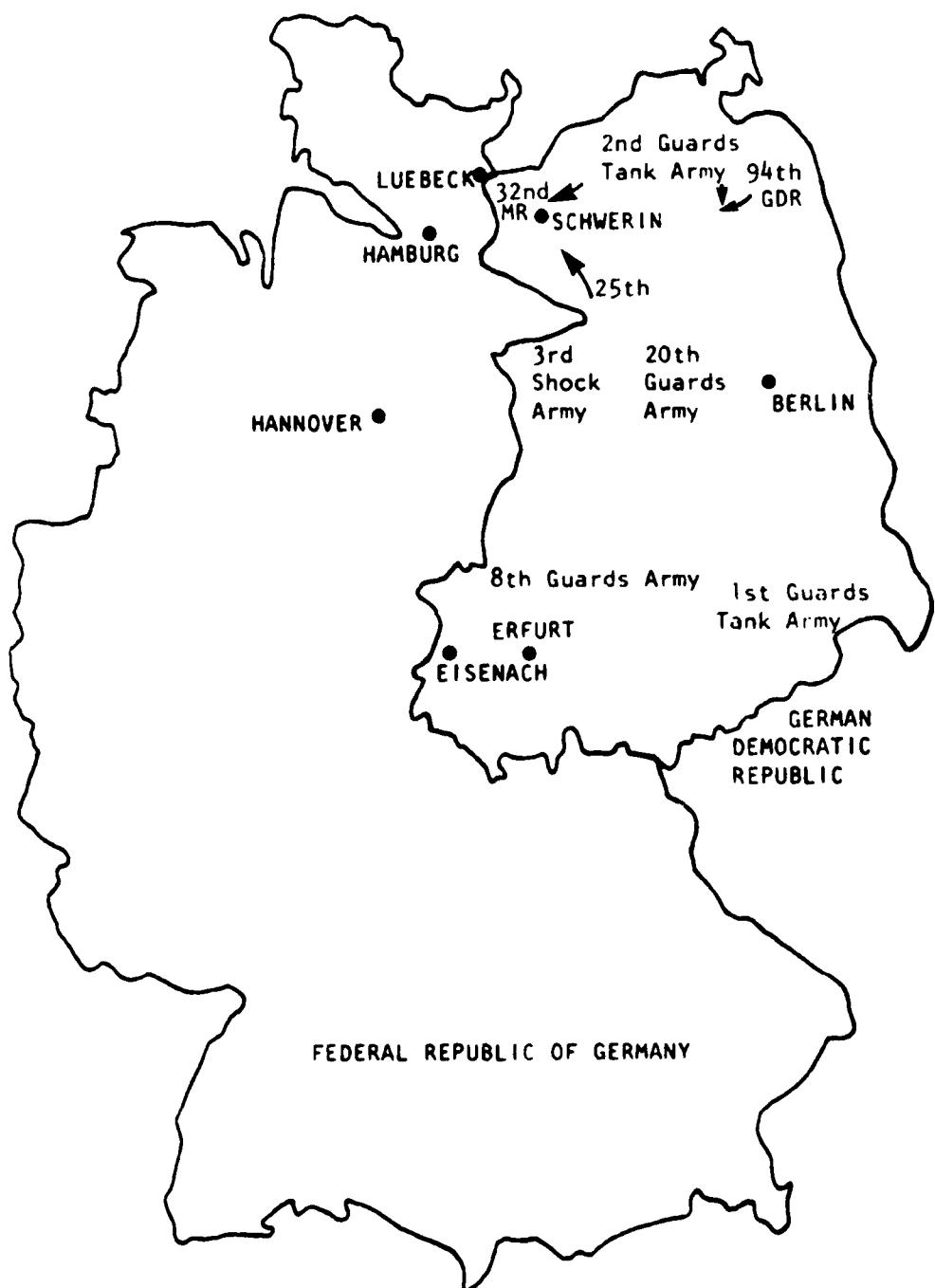
Throughout the GDR, Soviet headquarters, airfields, depots, etc., are concerned with their own safety and have deployed their security guards in perimeter defenses around them. The Soviet CINC in Germany is in constant contact with these organizations which are requesting that Soviet combat units be deployed to protect them against potential attack by regular and irregular East German units.

Word from Soviet officers elsewhere in the GDR, however, is for the moment reassuring. They report that the GDR troops are in their caserns and do not appear to be caught up in the

A-12

Chart 11

November 27--09:00



Order of battle and general locations of the Soviet armies in East Germany from Soviet Theater Strategy: Implications for NATO, by Jacquelyn K. Davis and Robert L. Pfaltzgraff, Jr., USSI Report 78-1, p. 37, United States Strategic Institute, Washington, D.C., used with the permission of the United States Strategic Institute. Two East German divisions are assumed to be in the north, two in the center, and two in the GDR.

emotional upheaval which is sweeping the northern and southern ends of the front. In fact, one of the Soviet officers reports that he is in contact with the commander of a GDR infantry division who assures him that the troops are reliable but recommends that no attempt be made to disarm them. Another Soviet officer reports that a GDR division is also calm and that he is convinced that the German commander is not about to order his troops to leave the caserns. Furthermore, he states that in his judgment the troops themselves do not at this moment seem to be disturbed by the situation.

Reassured, the Soviet commander in Germany orders the Soviet 39th Guards Motorized Rifle Division of the 8th Guards Army to move against the positions held by the GDR Infantry Division near Erfurt. He requests the headquarters of the GDR Army to appeal to the troops of the GDR divisions at Erfurt and Schwerin to return to their caserns. The

09:30 GDR commander complies with this request, stating in his broadcast to the troops that they are risking the homeland which, if general war should break out, would be utterly destroyed. Despite this broadcast a small group of GDR infantry in the northern sector, along with a mob of civilians including army reservists that had picked up arms, attacks a lightly-defended Soviet fighter field, capturing or destroying all the aircraft that were not on alert and ready to take off. It is obvious to the leaders of the group

who have taken the fields that they will not be able to hold it once reinforcements begin to arrive and support the Soviet security guards that had been driven from the field and is now attempting to make contact with Soviet relief columns. So the field is destroyed, the runways cratered, the rubble mined, and the buildings set afire.

Nov. 27
11:30

The problem of civil disobedience is growing rapidly in the northern and southern sectors of the front, and the Soviet commander in Germany feels that the difficulties with the rebellious GDR divisions must be quickly stamped out before the situation becomes uncontrollable. He therefore orders Soviet fighter-bombers to strike the GDR troops which are battling Russian units outside Schwerin and to attack units of the GDR division deployed against Soviet troops in the Erfurt area. These air strikes, however, do not produce the desired results, primarily because of the confusion in the battle zone. Civilians (many armed) are roaming the countryside, some hunting down "pro-Russian Germans" and attacking Soviet troop units, POL depots, ammunition dumps and communications centers, but others are fleeing those areas controlled, or about to be controlled, by Soviet troops to areas controlled by "liberated" GDR troops, while still others, in the areas where there is no violence at the moment, are out to show support for the revolt, and others are just out to see what is going on during this exciting time (à la Hungary,

Poland, Berlin, in the past, etc.). They are also intermixed with many of the German units on the roads. Soviet units find themselves attacked by mobs of civilians as they try to move into position; and picking out targets for aircraft in this environment becomes difficult, particularly as the weather begins to turn stormy and rain showers sweep the northern plains of Germany. The results of the attacks are indecisive militarily, but have caused considerable casualties among the civilians, and word sweeps the countryside that Soviet aircraft are shooting down innocent civilians on the roads.

From the very beginning of this disturbance in East Germany, NATO headquarters has been concerned with the effect that the upheaval would have on the border areas and what contingencies should be considered. The basic feeling in NATO has been that so far as the military situation is concerned, the East German units close to the border, which are currently backing up the civilians, will shortly be driven westward across the border by the superior Soviet military forces. Statements have already been made to the effect that Soviet units will not be allowed to cross the border in pursuit of East German troops, and some NATO forces are put on alert, ordered to proceed to their forward deployment areas to "screen" the border in the "troubled areas," and ordered to prepare to allow GDR units who lay down their arms to pass through their forward areas. This exact operation, however, is difficult to carry out for many reasons. First of all, West Berlin is in a state of

great turmoil and sandbags are being put up in the streets while the security forces there prepare to fend off what they consider the inevitable result of this revolt, namely, a Soviet seizure of that part of the city. East Berliners, on the other hand, are appealing to West Berliners to seize the opportunity to knock down the wall, while Soviet troops are attempting to disarm East German security guards in East Berlin, as their reliability is now very doubtful. Furthermore, the number of people scaling the wall and getting away with it is increasing by the hour, some of these people being the security guards themselves.

Nov. 27 Along one of the "troubled areas" of the border, East
12:00 German military representatives have crossed over, and contact
 has been made with forward deployed West German units in the
 vicinity of Luebeck. These East Germans have asked the com-
 mander of the West German Military District to send West
 German forces across the border in the vicinity of Luebeck to
 support the GDR forces battling the Russians there. These
 East German military people assure the West Germans that the
 border guards will not dispute the passage of the West Germans
13:00 along this entire area, and word of this request quickly
 spreads throughout the forward deployed West German division.
 The commander of the West German division notifies NATO
 headquarters that such contact is having a bad effect on
 his troops and that it will increase as they move up. He
 suggests, therefore, that his units be relieved on the border

by another non-German NATO organization. The difficulty is that any rotation of troops at this time would only aggravate the confusion and danger on the border.

Another contact between East German and West German troops deploying forward is made in the southern sector, where East German troops meet members of a West German division. These East German troops also indicate to the West German soldiers that the border guards would not contest their movement if they decided to cross the border--and this is exactly what the East Germans ask the West Germans to do.

13:30 The commander of the West German division reports to his Corps headquarters that the contact has been made, that his troops in the forward area are aware of the situation across the border, and that he would like those troops to be relieved by units of some other NATO nation. This message is passed on to the commander of LANDCENT at Brussels who notifies SACEUR. A similar message is then received at Brussels from yet another West German corps: other West German troops deployed forward in case they have to "screen" a "troubled area," and who are now holding in the north central sector, are being contacted by civilians who have been allowed to cross the barrier by the East German security troops. These civilians have been passed along to division headquarters and, upon interrogation, have described the uprising on the other

side of the border. Unfortunately, the troops in the West German division now know of the situation. The division commanders express concern regarding their ability to keep the troops in line if things continue to deteriorate on the other side of the Iron Curtain.

The debate goes on at Brussels as to what the effect would be of replacing the West Germans on the southern front by an American division. In the meantime, reports have been pouring into Bonn from the military districts. These reports indicate a large-scale revolt behind the Iron Curtain--an accurate report, at least of the border districts. The only other firm information available to Bonn are the reports coming out of West Berlin that indicate a growing disturbance in East Berlin, and much Communist military message traffic on the radio. From the indications that are available to Bonn, the Soviets at this point have not been successful in crushing the military revolts on the northern and southern ends of the front. The only reports they have received are those of the strafing of the roads by Soviet aircraft, and this has indicated higher casualties among civilians than among the East German troops.

The whole battle area is quite confused at the moment, but from what Bonn can gather, the population of East Germany is rising, and it looks as though the Soviets will have their hands full holding the populace down. The West German radio and television at this point are broadcasting one continuous news

program covering events as quickly as news of them comes across the border, and extra editions of newspapers are hitting the streets. East German refugees are interviewed by mobile TV units as soon as they cross the border. These people do not need interpreters and the anguish, drama and determination are piped into every home in West Germany--and the feeling is contagious. Another result is that rumors and facts are sometimes getting to the populace before they reach Bonn. The Chancellor is sitting in his office with one eye on a television set and the other on his official message sources.

Something unanticipated, but far from completely illogical, is happening in West Germany, feeling is running high, and West German troops in many parts of the Federal Republic are being heckled by the civilians regarding their lack of sympathy with the plight of their relatives in East Germany. The troops have been responding that they are eager to go--if "those politicians in Bonn" would only turn them loose. Efforts by the officers to stop these remarks have been only halfhearted. It is becoming obvious to every politician in Bonn that any declaration that would indicate conclusively that the West Germans would not assist the East German revolt (which clearly could be construed as a failure to help effect reunification--the one traditional foreign policy goal to which all parties continue to at least give lip service) could mean political suicide to the man making it. In fact, the mood of the nation

has suddenly so changed that members of far right groups are already making statements to the effect that if West Germany stands by and watches another Hungary happen in East Germany, it will never again rise as a nation.

Word then arrives that farmers along the border areas of East Germany have begun to tear up the barbed wire entanglements in sectors where only East Germans man the border, without the security guards doing much about it, and that mines are being cleared in every way possible, including driving cattle through the mine fields to explode them. Almost every West German unit with patrol duty on the border has now been contacted by East Germans, and atrocity stories directed against the Russians are beginning to flood into West Germany by means of direct television interviews of exhausted, disheveled East Germans coming across the border. Civilians on the road are hampering Russian troop movements in the Schwerin and Erfurt areas, and several bridges have already been blown. In addition, train crews have stopped freight trains at railroad crossings across the roads being used by the Russians, and Russian reprisals in some cases have been severe.

Nov. 27
15:00

Stories of the strafing of civilians on the roads in the north are spreading all over Germany. At this point SACEUR contacts Bonn to inform them that Brussels intends to pull the West German division away from the border in the south and replace it with a division of American troops. Bonn immediately

replies that this move must be made without any chance of a feeling spreading among the West German populace that it has been sanctioned by Bonn.

15:30 The grapevine has been working, and the West German corps and division involved have already heard that the move is about to be ordered. Both commanders discuss the situation, and the result is a message by the corps headquarters to Bonn indicating that on second thought it might be difficult to withdraw these troops without a violent reaction from the populace in that area. They "feel" that the people want their army present in this perilous time, and if the troops up there begin to "abandon the area" the population may fill the roads "fleeing" with them, particularly if the Americans do not get up in time. There is, furthermore, the question of the logistics problem of passing one division through the other up to the front. The message is very clear to the politicians at Bonn: it is a protest--only a mild protest to be sure--but a protest from the military against the move. After things settle down the military will want to be in the clear.

15:45 The message returning from Bonn is that they cannot act outside of NATO, that the troops must look to Brussels for advice, and that the problems mentioned should be transmitted there. The corps commander does send a message to NATO headquarters describing these difficulties, but, at the same

time, transmits a confidential message back to Bonn stating that he is ready to carry out any plan in this crisis that Bonn can convince Brussels to okay. Bonn contacts Brussels and describes the situation in which it finds itself. No mention is made of the corps commander's confidential message, but Bonn does indicate that popular demand to help friends and relatives on the other side of the Iron Curtain is growing within West Germany.

SACEUR's greatest problem, however, is in the Luebeck area. SACEUR wants to replace the West German division on the Luebeck section of the border if he can. Since the southern corps message indicated, however, that German officers might also be worrying about their political position at home, SACEUR has some apprehensions that the commander of the division in the vicinity of Luebeck may wish to cover himself by issuing a statement, similar to the southern corps commander's, referring to difficulties in carrying out the move and the dangers that would be associated with it. SACEUR's fears are well founded, for though he does not know of it at the moment--nor does Bonn--the commander of the West German division near Luebeck had informally contacted the commander of another West German division, which is "holdin'" near Hamburg in case the "trouble" reaches the border south of the northern division's sector, at the same time that he had notified NATO Headquarters of the problem on the border (Nov. 27, 13:00). The commander

of the divisions near Luebeck has asked the commander of this division to his southwest to contact their West German corps headquarters to explore the possibility of his troops backing up the division near Luebeck "if something unavoidable" should happen."

The commander near Hamburg in turn makes informal contacts with personal friends in other West German divisions. Meanwhile, his staff officers contact friends of theirs in corps headquarters. The conversation with all these officers is the same. "What do you think would happen if we should move the troops of this division forward to help the division in the Luebeck sector? How much support would we have among our brother officers if we should decide to deploy them to the border?" Within minutes, the northern corps headquarters is alive with rumors, and within a few more minutes Bonn is alert that something is afoot.

From Bonn's point of view this is the worst possible thing that could have happened. The mayor of Hamburg has been reporting that all through the night of the 26th-27th, young people have been streaming toward the border and that efforts by his police to prevent them have been unsuccessful, primarily because he suspects the police do not wish to stop it. In fact, young people from Moelln have telephoned back that they are crossing the border freely into East Germany. Other mayors report that West German troops in the northern

sector are being mercilessly heckled by mobs of people, supposedly long-term refugees from East Germany, about their remaining inactive while "their brother East Germans are being slaughtered on the roads by Soviet butchers." These troops also indicate that they are willing to go forward if the politicians in Bonn will just turn them loose. Here again all efforts on the part of the officers to quiet the restless troops are only halfhearted; and this lack of resolve on the part of the officers only encourages the soldiers.

This is a real danger: even if NATO Headquarters were to make this move, it might be hours before the disruption caused by the shift could be straightened out. If SACEUR, on the other hand, were to issue a preemptive order to the Germans to pull back immediately, and they were to obey the order, the border would be left unguarded long enough for both East Germans

and Soviet troops to cross into West Germany. Reports, moreover, from American officers and other Allied nationals inside West Germany indicate that a great deal of conversation has been, and still is, taking place among German officers outside the normal NATO command network.

17:30 The German Chancellor, unable to delay any longer, gets on the air and makes a statement to the effect that the sympathy of the West Germans is with the revolting East Germans but he cautions against the danger of war which could destroy both sections of Germany. He is noncommittal about whether the West Germans will aid or not, but speaks emotionally about "the Germans in chains east of the Iron Curtain," who, at the moment, are calling for help from "their brothers to the West." He ends with the statement that though rash action must be avoided, the West Germans have not forgotten the captive Germans to the East.

18:00 The Chancellor has approached his NATO allies with the suggestion that they attempt to make a deal with the Soviets as quickly as possible since emotion in West Germany is running high. It is obvious to everyone at Brussels that Bonn is in a box. It cannot side with no aid for the East Germans; on the other hand, it would prefer not to have actual military intervention take place. The German military is aware of this; NATO is aware of it; and the Soviets are aware of it.

 The circuits between Bonn and Brussels, Washington, London, and Paris have been overloaded with messages for hours; but

the contacts have not been as rapid nor as fruitful as the polling that has been going on inside the West German officer corps by the commander of that division near Hamburg. He had received word by 14:00 that if he decided to deploy his units, the majority of his brother officers would support his decision to deploy to cover the border to his immediate front. This support would not be withheld even if the "unavoidable" were to happen in the Luebeck area and units of the West German division there were to engage the Soviets on the border, or even if in the confusion some West German troops were to temporarily cross into East Germany. It was also the majority opinion, however, that if he orders his troops to move forward, he should put his own military reputation on the line by simply acting in the emergency and not ask permission from his corps commander.

The commander of the division near Hamburg calls the commander of the West German division in the Luebeck sector, informs him that he thinks that he has enough support for a deployment within the officer groups, and cautions him not to make any rash moves--but if something unavoidable were to happen and he were to become engaged, the division near Hamburg would be ready to deploy to cover him.

Unfortunately, as in all such "private" messages in the military, the word leaks out, and staff officers begin to tell their brother officers in the lower echelons a garbled

version of the decision. At this point the border is wide open in many sections between Luebeck and Lauenburg on the Elbe.

Refugees, both military and civilian, are moving westward carrying the victims of the Soviet strafing attacks: hysterical mothers holding their bloody, critically wounded and dead children, old people clutching a few possessions, "walking wounded" hobbling toward safety, fellow Germans all--and all "live" on West German and world-wide T.V. Local West German doctors are meeting them at the border, and West German ambulances are even crossing into East Germany, protected by units of the East German division, to bring out those who have collapsed short of the border. Calls for blood donors are heard on all local radio and T.V. stations. Yet West Germans (many of them East German escapees), some of them armed, are crossing into East Germany to find and bring out relatives. The night is alive with the distinctive sound of West German ambulance "sirens," the distant flash and rumble of gunfire and the pitiful wails of injured and lost children--and the mobile T.V. units capture it all. West German units are quickly caught up in the rescue operations and are cooperating fully with East German border guards, civilians and military units. It is obvious to most small-unit commanders, both East German and West German, that when the Soviets reach the border, they are likely to do so at spots on the flanks of this wretched column. If this happens sheer panic will seize the refugees, causing a stampede, and loss of life.

The West German small-unit commanders handle first things first. They allow East German units to regroup and reenter East Germany on the flanks of the column and even place their heavy ordnance in a position to support them should they come under Russian attack. The rescue operation, the "combined" military operation and the civilian movements in both directions have now made the border rather meaningless, at least to the small-unit commanders. Also, West German troops on the spot have little stomach for political niceties as far as East German Communists or Soviets are concerned. Ordnance emplacements, spotter positions, fields of fire, etc., are laid out, based on the terrain in the area, with little attention being paid to the demarcation line.

Units of one brigade of the West German division in the Luebeck sector make contact with East German units, and form a liaison with fighting groups from the GDR division. This move has actually put West German units on, or perhaps even over, the border south of Luebeck. (This point is not quite clear at division headquarters and the troops themselves have never actually been on the border before, so they keep running quite unexpectedly into whatever traces of the "fence" are left.)

Nevertheless, the rumor of a crossing spreads like wildfire throughout northern East Germany. It reaches the Soviet 32nd division in Schwerin almost before the commander of the West German division is aware of a possible crossing himself.

The commander of the Soviet 32nd, who is responsible for the border area, is fighting units of the GDR division, is under heavy pressure from units of irregulars, and has still not received reinforcements from the Soviet division sent to support him. He now informs the Soviet headquarters that the

Nov. 27 West German division may be on the move into East Germany.
18:15

The headquarters orders the Soviet 9th Tank Division from the Second Guards Tank Army to move up to attempt to get in between the GDR division and "relieving" elements coming up from West Germany. The commander decides to swing around the south side of the town and reseal the border from south to north, since southwest of the town East German troops predominate, northwest of the town West German troops are thick as fleas. He would rather clear out East Germans first for several obvious reasons, and seal the border against incursions of other West German divisions to the south. Then he and the 32nd can deal with the West Germans inside East Germany.

When the news of the movements of this Soviet Division reaches him, the West German division commander in the Luebeck sector orders any of his troops which have strayed into East Germany to withdraw immediately. Some of the soldiers, however, have already come into contact with leading elements of Soviet units. In the rain, fog, darkness and confusion (the Soviet forces have also never actually been on the border before) it is sometimes not clear who is on which side of the border. The

West German troops call for aid which is given them from the brigade level. Mobile West German civilian radio and television news units go in with the support and the action is given minute by minute news coverage on the electronic media.

The commander of the West German division hurries to the affected brigades' headquarters and finds that that brigade, plus a supporting brigade, are moving eastward. The second brigade commander explains that he was merely plugging the gap made by the units of the first brigade that had moved up. The West German division now sees Soviet prisoners--its first contact with Soviet prisoners taken by the GDR division--and the West German commander finds that the Soviet kids seem to be demoralized. Their precipitous race to cut off "escaping" East Germans had ended in a dark, wet woods peopled by hordes of furious, heavily armed East and West Germans. The sight of these long lines of very frightened, confused Russian boys has an electrifying effect on West German troops and civilians (who see them on T.V.). They look just like the pitiful masses of Soviet troops who collapsed before the German drive of 1941! Maybe they aren't eight feet tall after all! East Germans crossing the border and representatives from the GDR division now indicate that a full-blown uprising is taking place all over East Germany to the extent that it is extremely difficult for the Soviet units to depend on any of their logistic capability.

Along the border area, the commander of the Soviet troops had reported to headquarters that he was being "attacked by FRG armor" and had asked for air support. Even though it was almost pitch dark, the fighter-bombers had flown out of Soviet airfields and had struck at the East German and West German troops in the area of Ratzeburg. In so doing, they had accidentally crossed the West German frontier and triggered - the air warning system for Hamburg, Bremen and Kiel. West German fighters had scrambled to meet this "attack" and engaged enemy aircraft in the Ratzeburg area. In the action, they had followed the aircraft back into East Germany and thus "provided air cover" for the West German units on the border.

18:30 On hearing of the movement of another Soviet division "against him" from the southeast, the West German division commander signals to the commander of the division near Hamburg that "the fat is in the fire." He warns that if he is hit by that second Soviet division (the 9th Tank) his outfit will collapse, leaving the area north of Hamburg open to a Soviet invasion. If the West German commander of that division to the south wishes to deploy on his own responsibility, now is the time to do it.

Nov. 28 02:00 The commander of this second West German division takes the bit in his teeth and orders units of his division to cross over into the bridgehead, which moves them into a gap in the

Soviet front between Roisenburg and Salzvedel now controlled by rebelling GDR troops. The FRG troops pull out with alacrity and in a very short period of time they are in the gap which extends into East Germany.

The move has the desired effect on the Soviet 9th Tank Division moving to swing south around Schwerin then engage the West German division coming from the Luebeck sector. It stops dead, turns around, and begins to fall back, while asking for support from the Soviet 25th Tank Division of the Third Shock Army that was moving up to the assistance of the Russian troops at Schwerin. This second division changes direction and tries to swing into line across from the gap to face the second West German division moving from the Hamburg area. The Soviet 32nd in the Schwerin vicinity, now under attack from the GDR division, plus the elements of the northern division from the Luebeck sector of West Germany, begins to fall back, hoping for support from the Soviet divisions moving up.

08:00
Dawn
Over-
cast

Once the Soviet 32nd around Schwerin begins to retreat, the northernmost West German division facing it performs a "limited movement" to better its position (a classical textbook maneuver according to NATO doctrine), but to the Soviets it looks as though it is shaking loose and beginning to run past the left flank of the Soviet 32nd division toward Buetzow.

Meanwhile, two other regiments of that GDR division in the other northern "troubled area" leave their caserns and join the one regiment that, after it had left its garrison, was being shadowed by a regiment of the Soviet 94th Motorized 12:00 Rifle division. In response, the Soviet unit recoils towards its other two regiments, calling division headquarters frantically for help. The headquarters orders the other regiments of the division to support the unit. The GDR division takes off at full speed to hit the Soviet regiment before it can be reinforced or join other units now on the way to help the Soviet 32nd retreating from Schwerin.

All of East Germany is now becoming quite difficult for Soviet troops to operate in. The Soviet 94th units find it difficult to join up as roadblocks have been put up, bridges blown, and in general, delaying tactics taken against them by the regular and irregular East German units, while they are under constant sniper fire from a partially armed citizenry. POL dumps are set on fire; burning vehicles are encountered on the roads; trees are felled across the roads on the way; and small-arms fire compels the armored vehicles to move buttoned-up for much of the way. The net result is that the units of the Soviet 94th are slowed down enough so that before they can rejoin their division they are badly mauled by the East German division which then changes direction and heads west, capturing some POL stockpiles and ammunition dumps as it moves along. East German fighters give the GDR

division some air support while launching quick strikes against Soviet air bases.

Meanwhile, reports continue to flow in from East Germany that the entire nation is up in arms against the Soviets. The East German Postamt telephone workers have, in effect, disconnected the Soviet military communications network in East Germany. Commands can now no longer be sent over telephone, the Soviet military units are trying to operate on radio, and the vast volume of message traffic required in this unforeseen volatile military and international political situation simply have swamped the radio net. Com Z message traffic in particular is completely bogged down and the LOCs have all but ceased to function on schedule. The roads in the vicinity of Soviet troop concentrations are literally clogged with wrecked and burning vehicles, fallen trees, utility poles. Bands of young people are roaming the streets of towns and villages, armed with any type of weapon they can find. They are now being joined by other young people who have filtered across the border from West Germany in the areas closest to the Iron Curtain. Reservists and ex-Bundeswehr and East German troops are in some cases establishing a semblance of order in these groups and developing some relatively successful delaying tactics to be used against the Soviet units.

Large numbers of older Bundeswehr veterans, particularly members of rightist organizations in West Germany, are also

streaming across the border carrying any type of weapon they can seize. At nightfall Soviet security troops around any installation are likely to be attacked and Soviet units on the march are forced to move "buttoned up" much of the time and set up peripheral defense after dark. In the cities of East Germany, irregular units are putting up a stubborn defense from house to house against the ever-increasing number of Soviet regular troops required to clear out these areas.

In a new engagement, at 13:00, troops of the West German division from the Hamburg area commandeer civilian stocks of POL in their rear area in the FRG and kick off from their bridgehead sector controlled by the East Germans, hitting the right flank of the Soviet 9th Tank division east of the gap, tearing a big hole in the regiment that faces them, and while about half the division keeps up the pressure on the 9th, the other half begins driving around the rear of the remnants of the Soviet 32nd in the Schwerin area. The remaining units of the Soviet 9th reel southeast on the Soviet 25th Tank Division

Nov. 28 20:00 and in the confusion, the leading elements of this West German division penetrate as far as Parchim. At this point, other West German divisions in the north, in traditional, Western "recon drag" manner, wish to begin to move in behind these troops; and in the south, elements of a West German division make contact with elements of an East German division in the border area near Eisenach. The remaining East German divisions

now leave their caserns and begin to deploy. The GDR division between Eisenach and Erfurt has been clashing with the Soviet 20th Guards Motorized Rifle Division of the 8th Guards Army, and elsewhere in the south an East German division suddenly mounts up and slides off to the west, away from a Soviet tank division which attempts to intercept it.

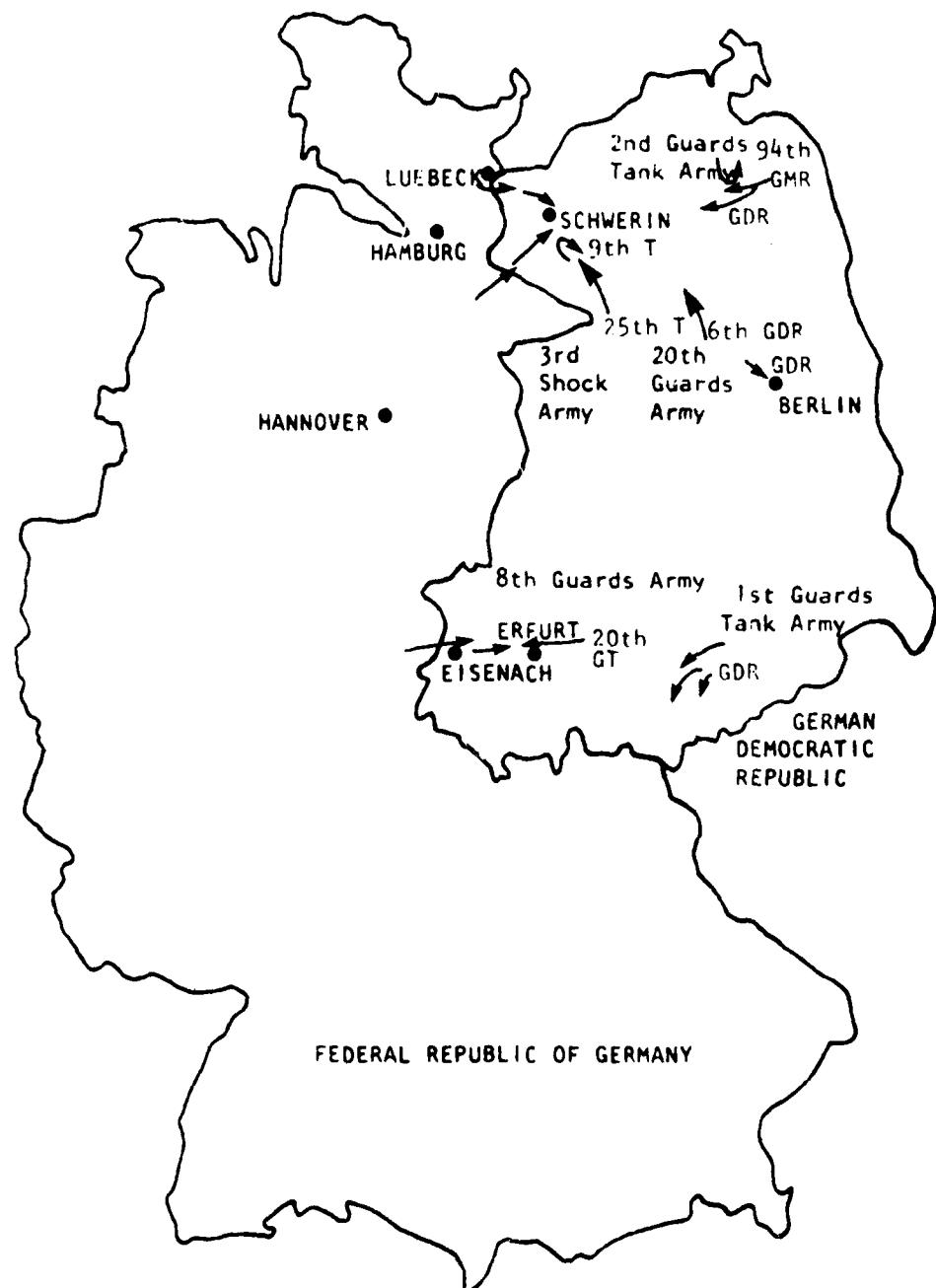
The nearest East German division leaves its caserns and joins the NATO troops in West Berlin. The whole of East Germany has now risen and the airfields housing the Soviet fighter planes vital for the support of their ground troops come under attack from irregular forces and from the rebellious regiments of the German Democratic Republican army. The extremely vulnerable Soviet troop transports bringing in reinforcements from the U.S.S.R. are shot from the sky by East German fighters and flak, wrecked upon landing on the damaged, obstructed and infiltrated runways of the embattled airdromes, or destroyed during or directly after emergency landings in farmlands. The airlift of Soviet airborne units is interrupted after only two regiments have safely landed. Civilians are fighting Soviet armored and infantry troops in Dresden, Halle, Jena, Wittenburg, Magdeburg, Leipzig, Potsdam, and East Berlin.

At the moment, several of the Soviet divisions are out of position to carry out the standard mission of a "blitzkrieg" against NATO (and indeed are bogged down in combat in this

mal-deployment) and it is also questionable how fast they could throw up a reasonable defense against all the West German divisions, if they should come in. It would be difficult for the Soviets to stop them close to the border, and they also do not trust the other NATO troops, so they would like to keep forces to face those non-German NATO forces, including the Americans. Because of the requirement to cover the "hostile" forces in West Berlin (now at the strength of two divisions), and the difficulty in carrying out coordinated troop movements in East Germany, the CINC GSFG has been reluctant to move any of the three divisions of the Soviet 20th Guards Tank Army, whose normal mission is to be "in reserve" behind the Soviet Third Shock Army in the center (which has already lost a division to the 2nd Guards Army sector). When all three divisions of the 2nd Guards Tank Army become "engaged," however, he orders the 6th Guards Motorized Rifle division to shift up to help the 2nd Guards Tank Army to face the West Germans, but because of the difficulty of movement and diversion of units to fight civilians in the towns, the 6th has been unable as yet to come to the support of the divisions of the 2nd Army. The divisions of the Soviet First Guards Tank Army "in reserve" behind the 8th Guards Tank Army in the south, are too far away to help in the center or the north, and also have rebellious citizens and East German military units to contend with. Because of this, and the great difficulty moving units on the

Chart 11.

November 28--08:00 to 20:00



Order of battle and general locations of the Soviet armies in East Germany from Soviet Theater Strategy: Implications for NATO, by Jacquelyn K. Davis and Robert L. Pfaltzgraff, Jr., USSI Report 78-1, p. 37, United States Strategic Institute, Washington, D.C., used with the permission of the United States Strategic Institute. Two East German divisions are assumed to be in the north, two in the center, and two in the GDR.

roads, they have as yet been unable even to move up units to reinforce the 8th Guards Army at the "front," which has units out of position fighting East German units and rebellious civilians up there too.

The West German Bundestag is now in great confusion. Mobs are in the streets of every large city in West Germany, and the Defense Minister is under intense pressure from his Corps commanders who point out to him that if he does not release all the troops soon, those already close to the border may be in combat on their own volition and will deliver an uncoordinated attack that may fail. They claim, on the other hand, that a quick strike by all the West German divisions might temporarily tip the balance against the Soviets so that negotiations between Bonn or NATO and the Russians over East Germany might well be a much more appealing alternative than the large and dangerous effort the Soviets would need make to recoup the situation militarily. All kinds of face-saving devices for the Soviets are suggested. Also a demilitarized zone in German territories east of Berlin, supervised by the United Nations, where no German troops would be housed, and other such guarantees are put forward.

The Corps commanders present a military plan to Bonn supporting the revolt to pressure the Soviets into negotiating. The plan is based on the idea that the Communists may show less resistance to change in East Germany should the West German army be in a posture to implement its intervention in East Germany; with

this posture, perhaps some measure of freedom for the East Germans may be wrung from the Soviets if things do not go well for Russia in the revolution. The Corps commanders' plan calls for most of the West German Panzer Grenadier Divisions to mass at certain key points behind the Panzer Divisions--as though to exploit a breakthrough into East Germany--rather than to string all of them along the border in a purely defensive mode. The generals reassure Bonn of the effectiveness of the plan. They affirm that in the first place the presence of the American army guarantees the integrity of Bavaria, regardless of what might happen in East Germany. Second, they point out that many Soviet units in East Germany are even at the moment more or less immobilized because of the revolt. With the addition of the West German divisions going up to the border, the situation could become so unstable that the Soviets would fear to launch an attack to the West. They indicate that there has been a tremendous swell of volunteers and reservists pouring into the Bundeswehr enlistment centers and that the 60-odd million Germans in the West seem bent on rescuing the 20-odd million on the other side of the Iron Curtain, regardless of what any political leader has to offer. They also point out that the only way the other units of NATO--American, British, Canadian, etc.--could prevent the Germans from moving forward would be to set up roadblocks against divisional units of West Germans.

There has been a remarkable change in morale and élan in the West German army in the hours that have passed since the

beginning of the revolt. Although, prior to this time, a soldier was not necessarily considered to be the highest form of life in West Germany, he is at the moment a national hero. The commander of the northern attack is, in fact, the most spoken of man in Germany. Ever since he deployed, mobile units of radio and television have been following the action, and a description of the advance as it goes into East Germany is being televised all over West Germany. Newspapers are running extra editions with the names of the villages that are "liberated" (and a few, of course, are). The West German troops are being welcomed in East Germany by delirious mobs, and it is a heady experience for the young German troops to be riding through throngs of people shouting "Freiheit!"

To Bonn the Corps commanders indicate that West German aircraft are clashing with Soviet planes along larger and larger sections of the border, and suggest that it is going to be extremely difficult to keep the whole West German division being contacted by East Germans in the south from becoming involved. What the Corps commanders do not tell Bonn is that a rumor is sweeping through the West German troops that they are going "all the way in" and that the Americans are going to cross behind them. Furthermore, this rumor is being transmitted to the East Germans as fact. It is obvious from the noise of the crowds outside the Chancellor's window that at least one very verbal section of the West German populace

does not want to sit idly by while this great opportunity for "reunification" and "liberation of part of the homeland from the Russians" slips by.

It is obvious to the West German Corps commanders, and they make it clear to Bonn, that if anything is going to be done, it will have to be done soon. The few regular units, both East German and West German, now engaging the Russians, and the swarms of irregulars cannot hold out for any significant period of time against a concentrated attack by regular Soviet units. The Chancellor and his staff are exhausted from lack of sleep and the constant pressure brought to bear on them by their military people, the restless crowds in the street, and an ever-increasing number of verbal politicians led by the rightist groups.

The Chancellor now appeals to NATO Headquarters to offer some suggestion that he can use as an alternative proposal to his Corps commanders. SACEUR, however, is also in a quandry. It is obvious to him that the British Army of the Rhine cannot hold the German units in the north from going in if they so desire. The American army could possibly set up roadblocks and keep the rest of the German units in Bavaria from reaching the border, but this would bring up a very ticklish situation as to what exactly would happen when the lead elements of the German units touched the U.S. roadblocks. The last thing that anyone wants at this point is to have Germans fighting Americans.

Bonn's initial request for a Western contact with Moscow to try to make a deal for East Germany has been complied with, but, as of the moment, none of the conversations which have been keeping the "hot line" between Washington and Moscow busy for the past hours have come to any fruitful conclusion. SACEUR puts on his hat as CINCEUR and queries the commander of the American army in Germany as to the attitude of the people in the area toward West German military action. The army commander indicates that, from all the news available to him, the population seems to be in favor of it, and, furthermore, the feeling among American officers is that their soldiers will be reluctant to stop West Germans from going across the border and hitting Russians. He cautions further that because of the rumors spreading in East Germany about the Americans coming in, any precipitous deployment of American troops toward the border to block oncoming West German divisions could easily be taken by the Russians as the follow-on American force coming in to support the West Germans. The army commander says, however, that if the West Germans should go in and get the worst of it and have to pull out, a rapid deployment could be made at that time by his army. This move would have no effect on Soviet opinion one way or the other, for it would then be obviously defensive against the advancing Soviets. CINCEUR passes this word on to Washington and receives a message back which in effect says, "Tell the army commander to do what he can but to avoid a fire-fight with anyone."

Brussels can be of no help to Bonn at the moment, and the Chancellor and his staff reconvene with their military advisers. A significant thing is happening in East Germany which the Corps commanders points out again, that might be something only temporary, but which, at the moment, would make the difference between defeat and victory for any West German units crossing over. From all that the West German units can find out, both forward and rear area Soviet airfields seem to be under such heavy attack by small units that at least the forward fields may be untenable at the moment. The only fields that are functioning are those that have been specifically protected by perimeter defenses by large units of regular troops which are, in effect, dug in around the fields, keeping irregular forces out of range of their small arms and mortars. Even some of these fields, however, are now under attack by East German aircraft and artillery fire from considerable range.

The movement of the big transport planes which were bringing in airborne troops from Russia can no longer be protected, and this airlift has been reduced to a trickle. Because of the relatively inclement weather, it has been difficult for the Soviets to find and clean out harassing groups; furthermore, some units are hard to identify as they melt back into the population. At the moment the best they can do is hunt for artillery pieces with their remaining air and try to extend their perimeters wherever this is possible. But this is costing a considerable number of regular

troops, and the net result is that the countryside is more or less coming under the control of the roving bands of irregular and regular troops. As a result, the Soviets have evacuated some of the fields and displaced the planes to airbases that are under the protection of Soviet regular regiments. In point of fact, however, some of these fields themselves are not absolutely secure. Word has reached the West Germans, for example, that at least one field, which was protected by a perimeter defense, had been overrun by a sizable force of East Germans. The loss of planes and support equipment and materiel on this field was considerable, according to reports.

The Chancellor and his staff are in a quandary at this point, particularly since they are receiving continued warnings from the United States and Britain not to allow a full-scale West German attack and to recall their units now over the border. The Chancellor replies to the other NATO allies that he sees no other course for himself at this stage than to resign. He feels that he cannot truly act in the interest of the other NATO powers and still function within what seems to be the will of the German people. This brings the NATO allies up short; the last thing they want now is the collapse of the government of the Federal Republic, which is not beyond the realm of possibility. The NATO powers, therefore, inform the West German Chancellor that under no condition should he consider himself to be in a position where he must resign, that the NATO

powers are still his friends and allies, and that they only wish to preserve West Germany from destruction by the type of war that would almost certainly result from a full-scale German invasion of East Germany.

The West German Chancellor replies that he is not so sure this would be so, and that if they really wished to be of assistance they would press negotiations with the Russians. The British feel that the West Germans must withdraw before any negotiation can take place, but the West German military officers insist this would be precisely the wrong thing to do, since the Russians will not negotiate unless under pressure. At this point the German Chancellor again requests from the NATO allies some plan they might have which would look as if it is a feasible solution to the East German problem and which at least had the appearance of the possibility of securing the freedom from, or at least a reduction of, Soviet control of East Germany. No such plan is forthcoming that is satisfactory to the Germans, although Washington and London both indicate that they will make every effort to convince the Russians that they should reduce their control of East Germany. France says that it can think of no solution which would satisfy the Germans in the mood they are now in, and states that its position on the defense of West Germany against the Russian invasion was based on the idea of an unprovoked Russian attack. It feels that the Franco-German treaty still holds, and should the Russians cross the

border, the French divisions would be available to support the German and American defense of southern Germany. But France says that should the West Germans move into East Germany in force, or fail to withdraw those units now across the border, the French government will have to reevaluate its commitment.

The West German Chancellor therefore strikes out on his own and instructs his ambassador in Moscow to contact the Kremlin with the suggestion that talks begin immediately between West Germany and the Soviet Union to settle the East German situation. It is pointed out by the German ambassador, however, that it would certainly be to the benefit of both parties to keep these talks secret, since the West German government must save face if they fail and can only announce the talks if and when there is some indication that they have been "successful." This suggestion of secrecy is not at all contrary to Soviet wishes, for any negotiations with Germany at this point would look like a sign of weakness and there are signs of unrest in the other satellites. The Russians do agree to negotiate and talks begin immediately.

The West German government indicates to the Russians that if some solution is not arrived at quickly the situation could get out of hand at it might be difficult for the Russians to salvage anything out of East Germany without a long, hard battle on their hands. The Soviets deny this, insisting that the balance of power is definitely with them and that they can

settle the situation in East Germany and handle the West Germans too. (Indeed, the Soviets have begun to deploy fighters into Poland to regain the air initiative over East Germany, being lost because of their losing control of their fighter fields in Germany, and to protect their troop transport aircraft. The Polish government, however, is extremely nervous about trouble in Poland--which is already rumbling somewhat--if Soviet forces of any kind begin to become obvious in Poland, and no Pole, in or out of government, wants Poland to become a Russian battlefield. NATO ambassadors, of course, have been pointing out the disadvantages of becoming an area of targets in a Soviet LOC zone, or even the advantages to Poland of a neutral neighbor to the West. The Poles, therefore, are not cooperating and actually are greatly impeding Soviet ground and air unit movements--the mood in Poland is much as it was in 1956.)

The sparring between Russians and Germans goes on for a while, with the Soviets demanding that the West German troops be pulled back to the border before any negotiations be considered. The West German government protests that at this stage they cannot do this: the West German populace, in its current mood, will not tolerate trusting the Soviets. The West German ambassador points out that it is the feeling in West Germany, correct or incorrect, that the Soviets will

lose East Germany anyway; and the suggestion that West German troops pull back to the border and abandon their already "liberated" fellow Germans to Soviet rule once more before negotiations begin is inconceivable.

Some members of the West German Foreign Office are not completely in accord with the Chancellor's negative attitude toward the idea of military activity to force negotiations, and word of the negotiations which have been in session all night leaks to the West German military. Some inkling that negotiations may be going on between Bonn and Moscow reaches the press as well: the morning papers hit the streets with headlines to this effect and some--particularly right-wing--papers demand that either the Chancellor get from these negotiations freedom (and perhaps even some type of unification of Germany), or resign his position. Extremist editorials suggest that what is needed now is a man of action; and to some degree the military are depicted on television and radio and in the press as being heroes trying to free their brother Germans while some politicians might be seen as ready to take the chance of making the line that divides Germany even more permanent. The label of one who was responsible for the "stab in the back" of the military haunts each politician.

Of course, many publications and television and radio broadcasters follow a much less radical line, but the old cynicism of West Germany seems to be disappearing in the roar of mobs

of people who feel the German dynamic returning under the pressure of the East German revolt. Newspapers daring to publish editorials recommending West German inactivity for any reason are in some danger of risking their plant and facilities to the excited populace. World War II German veterans (some of them pretty tottery old boys), have consumed an adequate amount of beer, march down the streets arm in arm, singing "Ich hatt' einen Kameraden" and other such sentimental German soldiers' ballads.

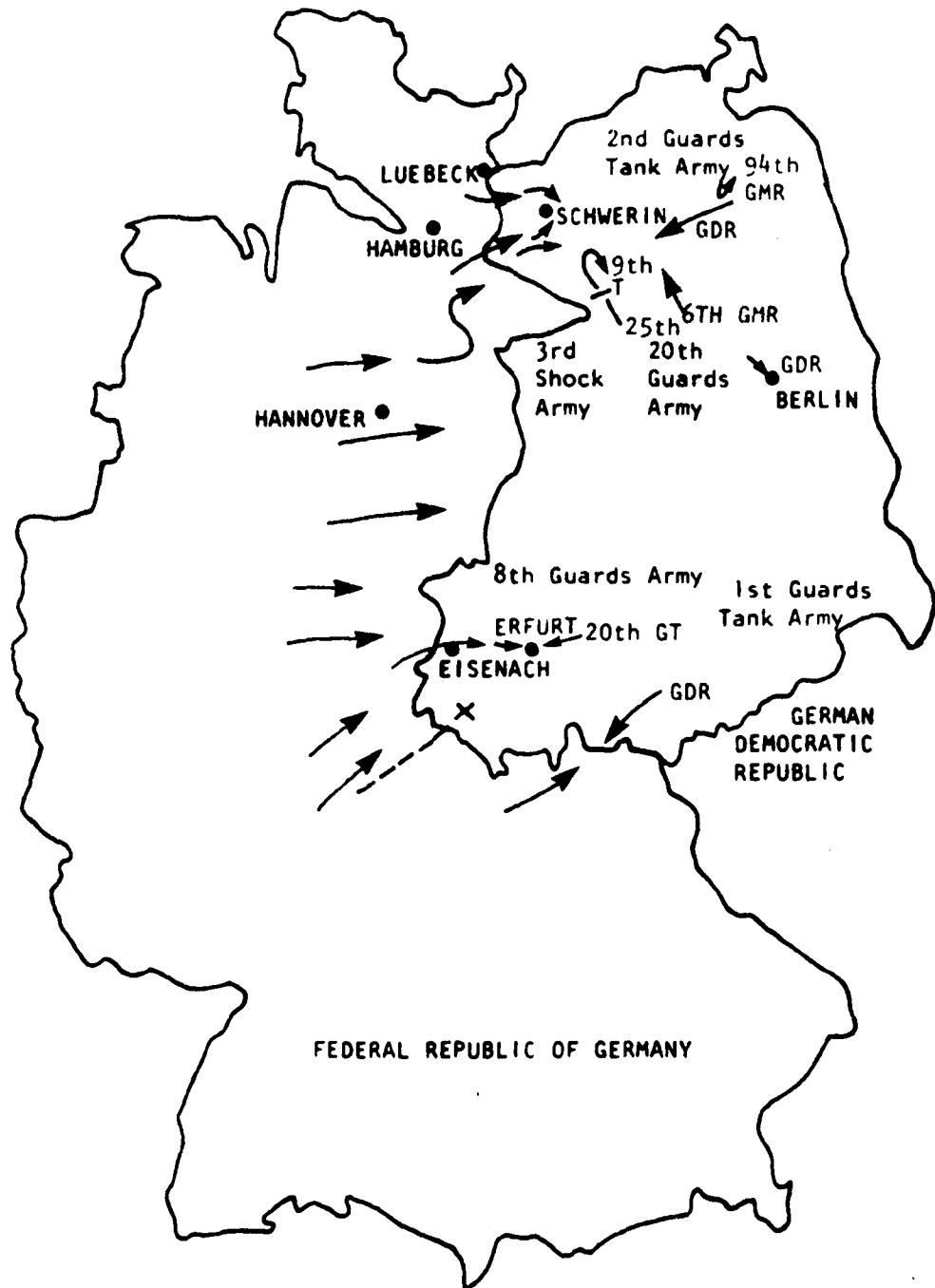
Nov. 29 Under the combined pressure of public and private opinion, 05:00 overcast the Chancellor agrees to allow his Corps commanders to move some ground the rest of their units toward the border, but only as a pre-fog caution lest East German and Soviet forces cross the border anywhere along the frontier. At the same time he is frantically cabling the ambassador in Moscow to explain to the Russians that he is being pushed to the wall, and adds confidentially, for the ambassador's eyes only, that, although he has given no consent for the troops to cross the border, he feels he cannot guarantee to hold them once they move up. This is not exactly the worst position he could be in, for while there is truth in what he says, and while Soviet observers in West Germany are reporting home the wild intoxication that is sweeping the populace of West Germany, particularly in the large cities, he

could hardly have created a better bargaining position had he done so intentionally. The words have hardly left the Chancellor's mouth, authorizing the German divisions to deploy, when the troops kick off. It is obvious to everyone that plans had been made ahead of time and that they were waiting to be released. The Bundeswehr reserves are called up at the same time and hundreds of thousands of young men swarm to their assigned posts.

Something now happens in West Germany that was not foreseen by the government in Bonn. Along with the order for the movement of the German troops up toward the border, the government had agreed to release the West German air units to move into position to support these divisions. This release put the German air transport capability into the hands of the military. They immediately flew to the appropriate air bases and began to take aboard elements of The First German Luftlande, the Paratroop Division, which, due to a misinterpretation of the intention of the Corps commanders, was then launched in behind an all-out West German air strike on the East German side of the "Fulda Gap" area. This strike took advantage of the loss of airfields by the Soviets, and the West German fighter units were able to maintain control of the air long enough to drop the paratroop battle groups in. Approximately a brigade was dropped on vital bridges while the rest set out in trucks for the border.

Chart IV

November 29--05:00 to 12:00



Order of battle and general locations of the Soviet armies in Fast Germany from Soviet Theater Strategy: Implications for NATO, by Jacquelyn K. Davis and Robert L. Pfaltzgraff, Jr., USSI Report 78-1, p. 37, United States Strategic Institute, Washington, D.C., used with the permission of the United States Strategic Institute. Two East German divisions are assumed to be in the north, two in the center, and two in the GDR.

Simultaneously, the other divisions kick off with record-breaking speed. Clearly, the staffs had apparently been working feverishly since the first moment of the crisis: approximately 7 Panzer and Panzer Grenadier divisions and the First Mountain Division, all in the right order to support one another, roar up the autobahns and secondary roads toward the "front." Again the Bundeswehr troops, in addition to the excitement of the mass movement of a Panzer army, enjoy other heady experiences. Many of their fellow citizens line the roads to cheer them and they are the object of all the media, including mobile T.V. teams. Some units are heading for the "weak points" at the north and south end of the front.

Other West German units are streaming up the roads past Hannover and other cities to take up a defensive position along the border with orders to hold the center at all costs. The Soviets, however, are not sure where the FRG units are going, they can move so fast compared to the Soviets (once the Soviets change position it is very difficult to get back again), and FRG units can change direction so fast (some units "feint" at one area then take off for another), that it is not until the last moment that the CINC GSFG can make a decision to move units to counter them, and then it is usually too late.

Nov. 29 Units of a West German division which had been "holding" 11:00 further south suddenly dashes north and then east up the Autobahn and through the gap in the Soviet front in the wake of the

division from the Hamburg sector, which is now striking to the north behind Schwerin to join the West German division from the Luebeck sector in an encircling movement around the remnants of the Soviet 32nd in Schwerin. The West German "Hamburg division" now changes front to face the Soviet 25th Tank that was moving to cover the right flank of the Soviet 94th Guards Motorized Rifle Division while the East German division and the West German "Luebeck division" mop up the remaining Soviet troops in Schwerin. The elements of the third newly arrived West German division now engage the much-mauled Soviet 9th Tank Division which has been holding the shoulder of the gap in the Soviet lines and pin down the remnants of these units, while the other East German and West German divisions consolidate the area in the "bulge."

At the same time, West German air strikes are ranging deep into East Germany, shooting up the remaining Soviet fighter fields and attacking Soviet columns on the roads. East German fighter aircraft from GDR fields now join in these strikes, and great difficulty is encountered in distinguishing friend from foe, as the East Germans are flying Soviet-made aircraft. It eventually boils down to the pilots' talking to each other when squadrons are sighted: if the squadron sighted speaks German without a Slavic accent they are usually friends; if not, there is a dogfight.

In the south, the "loose" GDR division has outrun the pursuing Soviet division, which has been hindered in its movements--as

are all Soviet divisions in East Germany--and the East German division sends a column down an Autobahn to make contact with the West German units.

Suddenly Brussels is being flooded with messages from elements of the U.S. army in Germany, the British Army of the Rhine, Canadian organizations and the Belgian and Dutch contingents that are up near the front. All send the same message: "Here come the Germans! What shall we do?" West German traffic control units are already on every highway, setting up control points for the rapid movement of the German mechanized divisions to the front; and as these areas of responsibility overlap with other NATO units the problem is becoming urgent for Brussels. No firm decision has been made at that headquarters, however, and SACEUR at the moment is querying Washington and London as to how he should proceed. The French have already made it apparent that they have no advice to give on this point. It is clear, however, that the American army commanders, at least, have no real desire to stop this movement and that the majority opinion among the troops seems to be the same. The years these troops have spent as brothers-in-arms of a common NATO force have done something other than give them organizational capability. The Americans have no desire to shoot at Germans to protect Russians.

In the meantime, word arrives at Brussels, from the American army, that West German civilian gasoline and

diesel supplies along all routes of march are being turned over to the West German mechanized units as they move forward. Similar messages come through the British. It appears that a good deal of telephoning has been going on between the Corps commanders and those civilians who know of the supplies of POL in civilian storage areas in West Germany, and that the West Germans have rapidly developed forward stocks of POL. If anything is to be done about this, it will have to be done quickly--the West German units that are farthest from the front are actually only about one day's march from the East German border and most of them are much closer than that.

Nov. 29 At this point, Soviet fighter-bomber strikes begin 12:00 against the West German columns inside West Germany, and not only instigate massive barrages of surface-to-air missiles and tube artillery anti-aircraft fire, but trigger the U.S. and British long-range air defense system; units of both RAF and U.S. fighters, along with West German fighter squadrons, scramble to engage the enemy. The result is that Soviet aircraft are, for the first time, shot down by American pilots. West German aircraft follow the Soviet planes across the border, but U.S. and British pilots break off the engagement upon encountering the safety zone along the border.

News of this action involving other NATO forces reaches Brussels almost immediately, and the British issue direct orders

for their fighters not to engage Soviet aircraft that may cross the border in the future, until and unless ordered to do otherwise by London. The U.S. reaction is to get on the "hot line" and try to convince Moscow to keep the battle inside East Germany. The West Germans, however, say they will scramble at each penetration; and the question triggers a debate in Brussels which is, to say the least, inconclusive.

At this stage of fighting, attacks by both East Germans and Soviet forces inside East Germany are concentrated on each others' airfields. Soviet forces which can be spared for such duty are directed to knock out the East German fields, as replacement aircraft are expected to be flown in from the Soviet Union to the few "secure" fields still available to the Soviet forces in Germany.

The NATO Council is now sitting in permanent session, trying to work out a feasible plan for the crisis. Foremost in the minds of all Council members is the question of the decision that will be theirs if the Soviets should use or threaten to use nuclear weapons in the battle in East Germany. West German officers in Brussels have already raised this question and have been prodding the NATO members to make some commitment. The West Germans at the moment are clamoring for a statement by the other NATO powers that Soviet use of these weapons anywhere in East or West Germany will bring immediate retaliation by American nuclear forces. The West German ambassador in Moscow points out to the Soviets the danger

of even mentioning nuclear weapons, thereby preempting the Soviets in their nuclear threat business; and the Soviets are aware, from their experience over the Federal Republic of Germany, that air penetration into that "excluded area" means an encounter with American units. American units have direct access to nuclear weapons and may even now be going to a high level of alert. The quick reaction air units may already be very "nervous" weapons systems. It is further obvious to the Soviets that in not too many hours, at least the northern and southern sectors of their front could be in deep trouble.

At this point, the outbreak of large-scale warfare in which U.S. bombers would be involved is imminent. In addition to the continuing confusion at the "front," all types of other restrictions (political and otherwise) could still prevail. It is still not inevitable that large-scale, deep raids need occur, though target acquisition and identification in the battle area could pose nigh impossible problems. All in all, however, strike requirements developed from this type of outbreak scenario can vary drastically from "standard" NATO outbreak assumptions.

APPENDIX B

SOME EXAMPLES OF THE TYPES OF FACTORS WHICH CAN IMPINGE ON THE PERCEIVED EFFECTIVENESS AND APPLICABILITY OF FIXED-WING AIRCRAFT ORDNANCE

The introduction of fixed-wing aircraft-delivered PGMs in the Vietnam War may have had something of an analogy in the initial phases of World War II. The German use of the Stuka dive-bomber to play the role of "flying artillery" and provide an ordnance delivery accuracy heretofore known only through the use of real artillery, had an effect on ground combat in those initial phases of that war somewhat similar to those attributed to aircraft-borne PGMs today.

Early in World War II, the Stuka, once it was on the scene, could acquire a target and deliver the ordnance with heretofore unknown accuracy immediately upon target acquisition. This not only was hard on fixed LOC targets, it also caused all kinds of damage to British and French, and later Russian, artillery units, etc., as well as spreading panic through the groups under attack. Armed with 20mm pods, the Stuka also became a potent tank-killer on the Russian front and remained active there until the very close of the war. (Elsewhere, however, the Stuka passed from the scene primarily because the slow, awkward plane could not live in the skies dominated by American and British fighter planes, but also because measures were taken--at least by the Western allies--to protect targets against dive-bombers. These consisted primarily of camouflage techniques for ground targets plus dense small-caliber anti-aircraft fire.)

At sea by 1943, Japanese dive-bombers, other than those piloted by kamikazes who plunged the plane itself right into the target, had also

lost much of their earlier capability primarily because of massive fighter-plane umbrellas, evasive maneuvers by the ships and massive large- and small-caliber anti-aircraft fire. Thus, the terror of the earlier days of the war, against which British and French troops felt helpless and American seamen raged, became another more or less manageable threat.

It is possible that fixed-wing aircraft-delivered PGMs may also find themselves in a somewhat degraded role once the threat is analyzed. Of course, without target acquisition and identification, the accuracy of the PGM is likely to be far less meaningful, so camouflage and spoofing of all types might be in vogue once more. Greater active defense might have to be concentrated on the delivery vehicle, except in this case, it would also include close-in defense against the PGM itself. To be sure, this is a much smaller target, but the weapons available to shoot at it, such as 6,000 round-per-minute vulcan guns, placed close to the aiming point of the PGM, can put up an exceptionally dense cone of fire down which the PGM must pass. In any event, there is likely to be from a little to considerable degradation of the PGMs under actual battle conditions. Of course, aircraft dropping free-fall weapons from low altitudes may be even more vulnerable to these defensive weapons, though their on-the-spot ECM may be more effective than cover given PGMs from stand-off ECM aircraft and the launch platforms themselves. New target acquisition and identification problems will also degrade free-fall weapons capabilities.

On the other hand, this paper is somewhat influenced not only by the possible degradation of PGMs and free-fall weapons through active and passive defense, but the possible increase in their capability due to technological developments. Improvements in target acquisition and

identification, which could degrade at least a passive defense against PGMs and free-fall weapons, must be considered. We cannot calculate the cost of a system which will detect and identify targets in adverse weather conditions and passive defense conditions with an accuracy adequate to allow a PGM to hit the target. There are some systems designed to do this now, but as we have seen earlier, there are those who claim that at least some of these systems are inadequate. Should these systems really be adequate, however, or should some new, highly effective system be developed, PGM capability could increase drastically and free-fall weapons would also increase in effectiveness. Furthermore, as pointed out earlier, ECM can do more than protect low-diving planes dropping free-fall weapons against active defense. Depending on the capability of the ECM equipment aboard a launching or covering aircraft, it can defend PGMs and their launching aircraft against active defense measures.

There are several obvious things of this nature which were not covered in any detail in this study, although some of the sections had to at least be aware of them if they were to be valid.

The scenarios found in this study have in them the kind of information from which more detailed weapons applications information can be generated. It will be noted in these scenarios, which are meant to be not completely atypical, and by no means exhaustive, examples of possible military confrontations in which the U.S. would be to a greater or lesser degree involved, that various types of weapons besides free-fall or PGM ordnance delivered by fixed-wing aircraft could be used. Because of the nature of this study, however, the emphasis is placed on these two types of ordnance, except when the other types of ordnance affect the requirement

for, or the milieu in which, these two types of weapons will be used. As indicated earlier, the PK of either weapons system were not computed for these various uses, but rather the PKs generated in other studies were accepted. Nor, as stated, did we do any calculations dealing with the desirability or cost of converting free-fall weapons to precision-guided munitions.

It is not so clear in the area of collateral damage, however, that the free-fall weapon will ever fare so well as a PGM. Normally, to insure a hit with free-fall weapons, a large number of them--sometimes a very large number of them--will be allocated to one target, and thus the collateral damage, if the target be in an inhabited area, can tend to rise drastically. In the case of the PGMs, even if the weapon is not as effective in battle conditions as one would expect, the numbers required and available to accomplish the mission should normally not rise to the level of those required for free-fall weapons, so the collateral damage, by definition, is likely to be less. In fact, the miss distances normally would average much less which would cut down not only the degree but the area of collateral damage. Clearly an exception to this is the very unlikely point where PGMs are showered upon a target in a populated area despite the fact that they do not have target-acquisition, which means that collateral damage in this case can be equal to that of free-fall weapons with the same explosive force. Even if precision-guided munitions suddenly became relatively cheap compared to what they are today, one would tend to preserve those weapons for a time when they could be more effective and, if conditions are propitious, use free-fall weapons in a clearly free-fall mode (e.g., there is no point in dropping

even not so expensive sophisticated weapons, which can be used with great effect in other circumstances, on a desolate jungle area target where specific aiming points cannot be acquired and identified under the foliage canopy, and only when there are secondary explosions can we determine that one of the critical points has been hit).

The Stuka (and the air force, naval and marine dive-bomber pilots of all nations) in World War II did not have to cope with the degree of certain kinds of restrictions that modern American aviators do. That is, today the issue of collateral damage, with the intent of avoiding non-combatant casualties, will outweigh the strictly military factors to a greater extent and in very many more cases than it did in World War II. (The Stuka pilots are sometimes said to have had, originally at least, a restriction which bordered on the collateral damage restrictions of today, i.e., blocking streets with the rubble of buildings--homes and others--created obstacles for Panzer units, so besides the requirement to take out the target with a minimum of bombs and sorties, the Stukas designated to hit a military target in built-up areas had additional discouragement from scattering their bombs over adjacent buildings.)

We did not enumerate in this paper the details of various kinds of PGMs and free-fall ordnance or their PKs against various targets (these data are thoroughly covered in other documents) nor did we attempt to postulate a cost-effectiveness figure for the various ordnances (these data too are available in abundance in the same type of documents). Rather, we deal with categories of weapons and uses based on capabilities of PGMs versus various forms of free-fall weapons (including cluster bombs), under varying terrain, demographic, meteorological and outbreak and battle scenario conditions.

As pointed out earlier, these conditions affect the evaluation of weapons effectiveness not only from a purely battle cost-effectiveness point of view, but from a political, moral and ethical point of view. Interestingly enough, the latter factors can often be delineated with less difficulty than some people might think while the former are often more difficult to determine than is sometimes supposed. For example, attempting to determine weapons requirements for a future war or "police action" by use of the opinion of experienced command personnel (a Delphi approach) can be quite complicated. To mention one possible problem, in what is often considered our most important theater area today, Europe, under at least one scenario it is difficult to find officers with the kind of experience that one may need in order to get valid opinions. None of our recent wars, or anybody's recent wars, has really given the kind of experience that would be needed to discuss the ordnance and other requirements in the great armored battles that would occur on the North European plain under the standard NATO scenarios for a general NATO-Warsaw Pact clash. There are, of course, large numbers of men in this country who have had experience in that kind of war--they are just quite old to be in the services in great number anymore. These are World War II veterans and one has to search the ranks rather thoroughly to discover officers who are left over from that conflict. Because of this age factor, fewer and fewer of even our general officers have served in great World War II battles (this may apply somewhat less to the Soviet hierarchy of command). Many "lessons learned" from Vietnam, Korea, or even the Sinai campaigns, may be inapplicable to a war on the central front of Europe. (There were large

armored battles in the Sinai, but for the most part, in a practically uninhabited desert with generally crystal clear weather.) In Delphi exercise, therefore, it may be wise, while we still have them, to consider including retired officers with World War II experience, and perhaps update them on the capabilities of new equipment, if they do not know it. Young officers, more familiar with the current U.S. and NATO equipment, can first walk through applicable scenarios of what that combat is likely to be like. At least at first glance, it may appear more difficult to do the second than the first. There may be too many details of combat to impress upon young officers to guarantee that one of the many important details, which can make so much difference in making decisions on battle requirements, has not been left out. One's first reaction then is to use both types of people, those who have "been there" and those who know what the new equipment can do. Supposedly, officers still in the service who have been in World War II, would be more familiar with the new equipment and its capabilities, so in using them we would have the best of both worlds. Lacking enough such people, we may wish to fall back on those retired veteran officers, who in that one respect may be somewhat more productive Delphi participants (after adequate instruction) than the younger officers without the veterans' experience. Furthermore, particularly on issues of control of the sea, close air support of ground troops, counter-armor and interdiction attacks, etc., in addition to air officers, the Delphi exercise should include deck officers, infantry and armored officers, transportation and engineering officers, etc. (or even enlisted men).

There are also other questions, such as those of detailed cost-effectiveness issues of whether a target is worth hitting at all, which

are not so easily answered. For example, a single sortie by a modern aircraft (to say nothing of the cost of a sophisticated PGM) to take out an enemy truck is worth more than the replacement value of the truck. However, the value of the truck to the enemy, at a particular point, at a particular time, could make the replacement cost seem infinitesimal; or its load, if delivered, could cause untold damage to friendly forces (e.g., a truckload of surface-to-surface missiles might destroy a dozen sophisticated friendly aircraft on a field).

Furthermore, in addition to the vital importance of coordinated ground attacks with interdiction strikes (mentioned in Section III), etc., other non-airborne weapons can directly affect the success of air attacks. For example, the combinations of weapons which could be used to achieve target destruction, or defense suppression to support primary target destruction, should not be thought to be limited to those delivered by fixed-wing aircraft. In Vietnam, for example, many primary targets, as well as air defense targets along, and directly behind, the hundreds of miles of enemy coastline, were within range of gun cruisers (and eventually a battleship). Many targets today fall into this category which are vulnerable to many other types of weapons systems (including CLGPs), often with much less risk to valuable launching platforms.

The details of such questions also were not and cannot be addressed here. As the "scenarios" show, the assumptions were that the selection of ordnance will be done on a professional basis and the correct ordnance will be delivered on the correct targets within the various constraints of a moral, ethical, political nature, as well as those associated with target intelligence, acquisition and identification.

